

GREAT LAKES TECHNOCRAT

25c

JULY - AUGUST, 1944

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WHOLE NO. 68



Illustrating the Futility of Price System Methods of Operation; Interpreting the Trend of Events from the Social Aspect of Science; and Presenting the Specifications for Total Victory in America's War Against Fascism.



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TECHNOCRACY DIGEST

625 W. Pender Street

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Postwar Planners' Blues

Free Enterprise Sees Ghosts

by Oliver Moffatt

Private enterprise takes credit for everything 'good' in America. But did you ever hear it claiming credit for anything 'bad.' Not so you could notice it! The 'good' comes about as a result of the glories of freedom of opportunity to chisel. The 'bad' is caused by bureaucrats and the Government. Poor old business must have a persecution complex. After this war is over America will be faced with, among others, four major problems. Private enterprise will have a chance to demonstrate its ability or disability to cope with these problems before going down for the long count from which there is no recovery. Let's look over these four problems and see what chance poor old business has.

Count Your Troubles One By One

THE problems that faced Price System institutions before the war are the same problems that will face them after the war. There will be a difference in magnitude only. The war will have intensified and magnified the Price System's troubles.

Here are four main problems that must be solved by all Price System postwar planners. Incidentally, Technocracy is not one of those planners.

1. Debt problem.
2. The technological problem of what to do with our enormously expanded plant and \$50 billion or more surplus war ordnance and equipment.
3. Unemployment problem.
4. Foreign trade.

It Would Make Good Wallpaper

First, let us consider the debt problem. In the matter of debt, Americans are economic illiterates. That

is, they have no clear conception of how the Price System works. They confuse money wealth, credit, debt, and the whole financial structure with the industrial plant, farms, natural resources that supply us with food, clothing, shelter, and all goods and services. Technocracy sums it up in these words:

The injection of monetary concepts into all discussion of national wealth and income wholly confuses the people as to the actual issues at stake, and furthermore serves as a handy screen behind which, with a little word juggling, the business-political operators of the Price System can continue their profitable activities without being too greatly embarrassed by outside interference. It is high time that the significance of national wealth and income be understood by every citizen on the North American Continent.

The majority of the American people do not realize that the debt structure of the Price System must expand constantly or the system will die. New debt must be created at an ever increasing rate in order to keep pace with the advance of technology. At the same time there are less sources of reinvestment, and the rapidly accelerating rate of payoff is driving financial institutions into that state of total liquidity wherein the interest rate approaches zero.

We don't have to go back far in history to produce examples on the operation of the debt structure. Total long and short term debt, approximate figures from various commercial and governmental sources and private statistical institutions, are as follows:

1914....\$130,000,000,000
 1929....\$310,000,000,000
 1933....\$238,000,000,000
 1943....\$410,000,000,000—plus

You might want to know how we got from 1914, when total long and short term debt, both public and private, stood at \$130,000,000,000 to \$310,000,000,000 in 1929. In that 15 year period, the Federal debt expanded \$12,000,000,000; \$9,000,000,000 was added by installment buying; \$22,000,000,000 was in the form of foreign loans; \$6,000,000,000 was added to State and municipal bonded indebtedness. Private debt added \$130,000,000,000 in long and short term items to its total. In 1929 the private enterprise boys had to call a halt on private debt expansion in order to make their outstanding debt valid, thus causing the debt

structure to contract instead of continuing to expand. You all know what happened. Some \$70,000,000,000 of that private debt was written off the books, and by 1933 the total internal debts of the United States, according to Evans & Clark, stood at \$238,000,000,000. In order for business to continue operating, the Government had to take over the function of creating new debt. This was instituted in 1932 with the formation of R.F.C.

Priming Will Wreck the Old Pump Yet

The pumping of funds into the debt structure at the top proved inadequate to stem the tide and meet the needs of the American people. With the advent of the New Deal, Government funds, i.e., public money, was then applied at the bottom to the low income consumer, who spends all he gets buying what the farm and factory produce, thus keeping the wheels of industry turning. While this measure of the Government unbalanced budget has not brought about any real advance in the distribution of America's abundance, (it did halt a chaotic period and stave off social change, with the probability of a more chaotic period in the future.) In ten years the \$238,000,000,000 debt of 1933 has increased to \$410,000,000,000-plus. \$15,000,000,000 of this is State and municipal debt, while \$186,000,000,000 is debt of the Federal government. Approximately one-half the total debt is now public debt. In 1914, the public debt was less than 1/12th of the

total. Quite a change in a short period of 30 years, isn't it?

The greatest amount of this increase in public debt has taken place in the last four years. In the first eight years of the New Deal the public debt expansion was at the average rate of \$4,000,000,000 a year. In the last four years the public debt expansion has been at the average rate of \$37,000,000,000 a year. Doesn't this give you a clearer picture of what is happening within our financial structure?

Those who have studied the function of the Price System know that to attempt to level off or decrease the debt would bring a depression similar to, but greater than, 1929-1933. They also know that we cannot increase the debt forever. There are some business men, economists and politicians who realize this. In Leon Henderson's article 'Can We Keep Our Heads After Hitler Loses His' in the February 1944 issue of the *American Magazine*, we find one individual who frankly admits that private enterprise has not found an answer:

Finally, there is the question of Government spending, when and if private activity fails to give enough jobs. We sweated through that question all through the 1930's and we still don't know the answer.

There is an answer, but it does not lie within the realm of Price System operations. Private business, by itself, has never been able to spend the required amount of money nor employ the necessary number of people

required to guarantee America's Price System operation since the advent of the R.F.C. in 1932. The Government of the United States has stepped into the breach and taken up the slack in debt creation and employment since that time and has been doing it at an ever-increasing rate since the start of the war.

The House That Technology Built

Let us look briefly at the second problem; the expanded facilities and \$50,000,000,000 worth of surplus ordnance and equipment. How much has the industrial plant of this Continent expanded? The aluminum production capacity of the United States alone is seven times greater than 1937. The steel industry could easily double its 1937 production of 52,000,000 tons if it operated at full load capacity. If and when a few new Government and private plants, not yet completed, get into operation, steel production will jump still higher; 89,000,000 tons of steel were produced in 1943.

Plastic production of 600,000 tons in 1943 was many times 1937's production. Factory output, according to a chart prepared by the Alexander Hamilton Institute, showed production at 100 percent in 1919; 117 percent in 1929; 123 percent in 1937; and 217 percent in 1943. There were 122,000,000,000 kilowatt hours of electricity produced in 1937; in 1943 there were approximately 210,000,000,000 kilowatt hours produced. Yes, an expansion of 88,000,000,000 kilowatt hours in 6 years; and one kilowatt does the work of 13 men

when applied to the machine; 88,000,000,000 times 13—you figure it out.

Is it any wonder that America can out-produce any other country in the world? It's because the majority of other countries are still depending on man-hours of labor. The ironic part of this increased electric capacity is that it has come from large hydro-electric projects built and financed by the Government, with public money. Some of these projects were depression-planned to help combat unemployment, and nearly all of them had been opposed by private power-producing companies or other financial interests. Despite their lack of integration into a Continental hydrology, we can still say: 'Thank God they were built.' America's industrial capacity, that is, her capacity to produce, has almost doubled since 1937.

Take the example of the airplane industry. In 1939 it employed 70,000 people, producing \$280,000,000 worth of products. In 1943, 1,700,000 people were employed producing over \$25,000,000,000 worth of products. The postwar period, it is estimated by the Vice-President of the Fairchild Airplane Corporation, should keep 275,000 to 300,000 people at work producing \$2,000,000,000 worth of products. Today the airplane industry is producing war planes at a tremendous rate. It has only one customer, Uncle Sam. Lend-Lease is Uncle Sam too. After the war, \$1,200,000,000 of that \$2,000,000,000 worth of business, it is esti-

mated, will still come from the Government.

There is no doubt that we will continue to maintain an up-to-date air force; hence we will need up-to-date planes. This postwar estimated \$1,200,000,000 yearly Governmental business would necessitate the immediate junking of the tremendous air force we will have at the war's end and the junking of every plane under construction at that time. This may make sense to the business men who must continue to sell planes in order to make a profit, but the American taxpayer must pay for this kind of business.

All in the Same Boat

In addition to the postwar reduction in dollar volume of business in aviation, there will be a reduction in volume of physical production. This is significant, because it affects other industries, the major one of which is the aluminum industry. Approximately 75 percent of the weight of an airplane is aluminum. What will the aluminum industry do when its major customer no longer needs its products? This also affects the railroads, as they are busy transporting aluminum, airplane motors, parts and other equipment all over the United States. This, in turn, affects the steel industry, which makes the steel to make the railroad cars, diesel and steam locomotives, other railroad equipment, airplane motors and the machine tools used in manufacturing these articles. It is acknowledged that at the war's end the United

States will have on hand enough machine tools to last for the next ten years. What is the machine tool industry going to do for customers? What are we going to do with this increased industrial capacity? Who owns it? Who will run it?

Leon Henderson puts it this way in his article in the February issue of *American Magazine*:

When the war finally ends, the Government and the Armed Forces will probably have on hand surplus goods and materials worth some \$50,000,000,000. Quartermaster officers tell me that half, or \$25,000,000,000 worth of these goods, can pass into the retail market. Socks and underwear, safety razors and toilet articles, drugs and medical equipment, typewriters, stoves and blankets, to mention just a few. Then there are the government-owned metals, such as copper, zinc, lead and aluminum. Eighty percent of the aluminum capacity belongs to the United States Government; 90 percent of the magnesium capacity, all of the synthetic rubber-making plants, 90 percent of the new airplane factories-in-aggregate, a mighty industrial empire, are now owned by the Government.

'To Be or Not To Be—'

The implication of these statements are not realized by very many Americans, even if they knew of or have read them. Here will be a vast

amount of goods which, if released to the market, will depress prices, and factories producing similar articles will be forced to shut down. On the other hand, if these articles are destroyed, the people most in need of them will suffer, and the taxes on the debt contracted to produce these articles cannot be lowered. Taxes reduce the purchasing power of the great majority of the population, who then will not have the necessary purchasing power to buy the articles produced and sold by private industry. This should give you some idea of the dilemma that faces the Price System institutions on this surplus capacity and material problem.

Technocracy sums it up this way:

At the end of the war, the North American Continent will be in possession of an immensely productive machine, and the controllers of that machine will be faced with the grim alternative of either throttling and dismantling it or operating it at its current high level. In the event it is throttled and dismantled, the operators will be faced with the problem of 20,000,000 to 30,000,000 unemployed. In the event it is operated at its present high level, the operators will be faced with the problem of distributing its output. Either of these situations will demand radical and revolutionary solutions, in the sense that they will have to be wide departures from any of the current postwar plans of either business or Government.

Buddy, Can You Spare An Apple?

The third problem is the unemployment problem. The majority of people realize that the unemployed have to be supported by some means. They are a drag on the rest of Price System society, who must pay higher taxes in order for Government to support them at a bare existence level. Under the Price System these people cannot contribute their proportionate share toward the operation of the system. They can do so only in time of war.

Here's a conservative estimate on postwar employment. While not exact, it is accurate enough for our purpose in illustrating the trend of employment from 1929 to 1933 and up to the first war year of 1940. Sources cited are the U. S. Statistical Abstract, the Department of Commerce, Bureau of Labor Statistics and the World Almanac. A couple of the figures on unemployment and employables are estimates derived from the figures given for census years.

Population — Labor Force — Employment — Postwar

	1929	1933	1940	Postwar?
Population	122,000,000	125,000,000	132,000,000	136,000,000
Total Civilian Labor				
Force	49,000,000	51,400,000	54,900,000	57,500,000
Total Employment ...	47,000,000	35,400,000	46,000,000	31,350,000
Unemployment	2,000,000	16,000,000	8,900,000	26,150,000

The figure for postwar unemployment is derived by subtracting a 30 percent technological displacement of labor from the postwar labor force, added to the 8,900,000 unemployed of 1940 who had previously been

displaced by technology. The 30 percent is the total of a calculated 5 percent annual increase in output per man-hour for the six years between 1940 and 1946. A 5 percent annual increase in output per worker for the years named is a very conservative estimate. Official figures of the Department of Commerce cite a yearly increase of 2½ percent in output between 1929 and 1941. This was the period of the unproductive, long depression. In fact, in the first 6 years, 1930 to 1936, production was very low. Most of the increase in output per worker, between 1929 and 1941, actually occurred between 1936 and 1941.

No account is taken here of the new employables that have been added to the labor force since 1940, about 600,000 each year. Most of them will be unemployed in the postwar period. Neither is any account taken of millions in the service and light industries who will be unemployed because of general depression conditions, not directly connected to technological displacement of labor.

All in all, a 50 percent relief load stares us in the face after the war.

Labor unions, fighting to maintain wage rates, have so roused the ire of some industrialists that these gentry will do anything to break the power

of the unions. This hate is a stimulus to mechanize to the limit. Others, through their laboratories and research staffs, will go on with mechanization and modernization as a matter of policy.

Man-hours per unit of production has continued to decline even under the cost-plus payroll padding system. It will do so even more spectacularly when the Government withdraws this artificial support from poor old business.

A Factory in Every Port

This brings us to the last problem facing our unrealistic planners: foreign trade. Most of the planners are worried about what Russia is going to do. They are afraid that if Soviet Russia dominates the majority of European nations, it will eliminate private ownership and set up huge state-controlled industries. American business is interested in profits and customers, and anything that would stand in the way of their freedom to chisel must be opposed and eliminated by any means at their disposal. They do not realize that technology, not politics, eliminates customers. If the technology of Europe advances as technology has advanced in Russia during the last ten years, then the fears of American private business will be realized. The part that technology is playing in the world outside of Europe has not been recognized by American private business. Being so intent on profits, customers and worrying about Russia, business does not realize that many of its cus-

tomers will soon be its competitors.

Australia before the war was the supplier of raw materials and mineral resources to British industry, a buyer of machine tools, farm and transportation equipment. Australia today has a machine tool industry of her own, produces much of her own mining and farming equipment and builds ships up to ten thousand tons. Her industries will also be looking for customers after the war.

Due to the inability of England to completely supply the Indian market during the war, India's industries have begun a process of mechanization and India won't be the customer she was before the war. Her own industries will partially supply her own needs and there is a possibility that she may continue to mechanize her industries until she can supply her home market.

Next comes South America, long the happy hunting ground for American business. Brazil used to buy finished steel products from England, America and Germany. In 1942 a complete steel plant was constructed in Brazil, with American materials and money. It went into operation in 1943. Other factories and equipment were sent to South American countries and they are now filling many of the industrial needs of that Continent. If the trend continues, South America will also be hunting customers for its expanded industrial plant.

Canada also has stepped up her industrial production. The Shipshaw project of the Aluminum Company of Canada will have an enormous

amount of aluminum and hydro-electric power to sell. To whom? For what?

American business looks for a greatly expanded export trade after the war in order to keep the wheels of American industry turning. Every other industrial nation wants to do likewise. They all want to export as much as possible and import as little as possible, and many of their goods are similar in kind. Machine tools, steel, transportation, farm and mining equipment, textiles, drugs, chemicals, and farm products. This would mean that from a world-wide shooting war, we would go into a world-wide economic war. The alternative to this under the Price System is to freeze social change under a world-wide fascistic cartel system. This would maintain profits and scarcity, hand tools and human toil, and operate for the benefit of a select few at the top. America's civilization is diametrically opposed to that type of operation.

Wanted: One Master Plan

The international situation offers no solution to business' postwar headache, and the sooner Americans realize that here on this Continent is the greatest array of technological equipment ever at the disposal of a people, a vast amount of natural re-

sources and a Continent with a geographical position second to none, then we will cease organizing for alien nations and ideologies and organize for America, along the lines dictated by her technology. Then and then only will the future greatness of this Continent be assured.

Technocracy is the only organization with an all-time plan, based on America's technological civilization, that is designed to meet this threat to America's future. That plan is Total Conscription of Men, Machines, Material and Money, with National Service from All and Profits to None, to be instituted for the duration and six months thereafter. That plan is designed to meet both the war and the immediate postwar problems. Without such a plan in operation, a chaotic period is most likely to ensue.

Technocracy is organizing for America. Its program is TOTAL CONSCRIPTION. It is organized for a planned, technological America, and to prevent chaos. It challenges your investigation. It asks your help.

Where else can America look to for help except her citizens? Poor old business is doddering into senility. America is young, vibrant and full with physical promise. It's your land and my land! Let's make America what it can be. Investigate Technocracy!

Factory employment has dropped by 600,000 in four months. Right now that's the nation's most critical economic trend. It's made doubly critical because our economic high command—officials in charge

of procurement, production and manpower—can't agree on what it means. Worse, if the sharp trend continues, it might precipitate a crisis before long.—*Business Week*, April 22, 1944.

My Kingdom for a Cook

Technocracy In A Nutshell

by Lilly Yngve

The first question a great many visitors to Technocracy Sections ask is: 'What's it all about?' Considering that it has taken 24 years of research to compile the body of thought called Technocracy, that is quite an order. The public seems to have a complex in favor of explanations in a nutshell. Usually the visitor has only a few minutes to spare, so the best we can do is give him a few choice nutshells and suggest that he read our literature. Here's what happened to one such visitor.

Scene: Any Technocracy Section

Visitor: (Walking in with a T.C. Leaflet in his hand which he had taken out of the holder by the front door): 'This looks interesting; what's it all about?'

Secretary: (Who had been observing him while he looked over the window display). 'It's all about the North American Continent. Suppose we liken it to a gigantic bowl filled to overflowing with Combination Salad. It's being served to 200,000,000 assembled Guests.'

Visitor: 'North America—bowl—salad — 200,000,000 — what the —; say, I must be in the wrong place.'

Secretary: 'Don't get excited; you're in the right place. Yes, we said salad but we are sorry to have to add that the Chef has made a mess out of it. It's not very appetizing. He put in too much oil, for one thing, and instead of tossing it lightly together has stirred the ingredients into a sloppy conglomeration.'

Visitor: 'Say, what kind of a place is this?'

Secretary: 'Never mind about that now. There, sit down, that's better. Now, as we were saying, everything is in an uproar and the assembled Guests don't know what to do. A few nibble at the salad once in a while with a sort of puzzled expression. Some gulp it down and ask for more. One group examines the mess and, concluding that it is not fit to eat, pronounces that it will cause chaos in the internal structure if not gotten rid of.'

Visitor: 'This doesn't make sense.'

Secretary: 'No interruptions, please. Remember, you asked me to tell you what it is all about. Now, this latter group, who had examined the messy salad, suggested that the Chef be fired, and one engaged in his place who could prepare a well-balanced dish. They named a Dietitian for the job, an expert in healthful salads. But the Host protested and praised the concoction, bidding his Guests to remember all the wonderful dishes that same Chef had prepared for them in the past.'

Visitor: 'Before I go screwy, too, please tell me who is the Chef and the Host, and what's in the salad, and what do you mean by too much oil, and who are the Guests?'

Secretary: 'One question at a time, if you don't mind. The Chef is the Price System and the Host is Private Enterprise. The salad ingredients are the natural resources of the North American Continent. They are such things as minerals, waterpower, forests, croplands, energy, technology and our industrial plant and equipment. In our Price System salad these are blended indiscriminately with crime, poverty, malnutrition, ignorance, illiteracy, minority group squabbles, neglected children, juvenile delinquency, hand tools, human toil, enforced scarcity, regimentation, war profits, chiseling, wealth and special privilege for the few, and native fascism. The oil in the salad is a blend of merchandising methods, advertising, money hallucinations, debt and politics. No wonder it's a mess.'

Visitor: 'I begin to catch on now. And—the Guests are the American people.' He straightened up in his chair and took off his hat. 'Say, you've got something there.'

Secretary: 'You bet your life we've got something, but that isn't all. As you say, the Guests are the American people and they are divided into three groups; (1) those who believe anything and swallow everything the Price System has to offer; (2) the skeptics who know that something is rotten somewhere but just can't figure it out; and (3) the Technocrats,

who have analyzed the salad, examined the operating characteristics of the Price System Chef, separated his sloppy dish into its component ingredients, strained out the oil, and exposed the whole mess for what it is.'

Visitor: 'I got that all right, but what is a Price System?'

Secretary: 'A Price System is any social system whatsoever that regiments its citizens to lifelong scarcity and insecurity by enforcing merchandising methods in the production and distribution of goods and services.'

Visitor: 'Well, I'll be damned.'

Secretary: 'Yes, you are and will continue to be if you don't do something about it. But we haven't finished our story yet. The Dietitian whom Technocracy recommends is Total Conscription. It is equipped with the measuring cup of science and technology and has worked out a well-balanced recipe for a healthful salad. This consists of an equal blend of Men, Machines, Materiel and Money, with National Service from All and Profits to None. It eliminates the harmful ingredients from our social system and our war effort. It will save an untold number of lives, shorten the war, preserve our natural resources and defeat native fascism, as well as the foreign variety. Besides that, it will provide a peaceful transition period and guarantee America against chaos in its internal structure in the postwar period. That's what it is all about, Mister. What did you say your name was?'

Visitor: 'My name is Smith. I'm just an average guy, but this sounds like the real thing to me. I have to go to work now, but where can I find out more about this?'

Secretary: 'Right here. Take some of this literature along with you. This Section is open every day and evening. We have Study Classes and lectures. Here's our calendar of activities for this month. Technocracy welcomes your investigation. Please come again when you have more time to spare. So long, Mr. Smith, glad you dropped in.'

Mr. Smith: 'Same here. I'll read these magazines and come to the lecture on Sunday. Wait till I tell the guys at the shop about this. Maybe a couple of them will come with me. Well, goodbye, see you later.'

Mr. Smith walked out the door and gave a parting sidewise look at the window display on his way up the sidewalk.

The Secretary turned back to one of those innumerable tasks that are always piled up and waiting for every Secretary and Member in every Technocracy Section Headquarters. But there seemed to be a slightly firmer tilt to her head and a trace of a smile played around her eyes.

Maybe she was thinking that the big job to be done in reaching the millions of Mr. and Mrs. Smiths, if America is to attain its greater destiny, seemed a wee bit lighter than before this Mr. Smith had walked in. Maybe she was thinking about that Combination Salad. Who knows?

Room For Only One

'Technological and institutional habits of thinking are now fundamentally in conflict. Our modern culture is basically contradictory in nature. In its technological aspects it is essentially rational, dynamic, and relativistic; but in its institutional aspects it is predominantly emotional, static, and absolutistic. When analyzing our technology, for example, we proudly exalt progressive, experimental, and scientific outlooks; but when examining our institutions we angrily defend traditional, established, dogmatic viewpoints. The result of this intellectual dichotomy is growing popular confusion, bewilderment, and social strife.'

'Our generation must, therefore, choose whether to decrease technology or to increase public planning. Technology has produced an interdependent society, and increasingly our basic civic problem is that of harnessing the gigantic powers of modern technology to promote the universal welfare of man. Technology and planning are functionally synonymous; if we would expand the one, we shall have to extend the other in commensurate degree.' Excerpts from *Educating for Social Perspective* by Edward G. Olsen, Director of the School of Education, Russel Sage College, Troy, N. Y. in the *Journal of the National Education Association*, December, 1942.

Background to Danger

by Harry Elmer Barnes

Reprinted by Permission from *The Progressive*, November 1, 1943

I HAVE pointed out in several articles that probably the chief reason why we face so many, so vast, and so apparently insoluble social problems, both at home and abroad, is the phenomenon of cultural lag—the fact that our machines have got out away ahead of our social institutions and social thinking, with the result that we are trying to control a dynamo technology with windmill institutions.

Most readers of these articles who have offered any comment at all seemed to agree with this general idea. But a number have asked me to go further and explain how this cultural lag—this gulf between machinery and institutions came about—and why we do not bestir ourselves to do something about it all. I will take a couple of articles to deal with this important matter.

A little reflection on the history of modern times and social psychology makes it easy to understand how this dangerous disparity between our material culture and our social institutions has come about. It is not, as some suppose, because our institutional development in modern times has been slower than in earlier ages. As a matter of fact, institutional progress has been more rapid since 1500 than in any other period of comparable length in human history.

Middle Class Pressure

What has brought about the great gulf between machines and institutions in our day is the fact that science and machinery have gone ahead with a rapidity never dreamed of before. There has been greater scientific and mechanical progress since 1500 than in the whole million or more years of human experience before 1500. Institutional development, even though relatively rapid in the last four centuries, has simply not been able to keep pace with scientific and mechanical progress.

Another important element in the situation is that the powerful business classes have, since about 1750, thrown the whole weight of their influence to stimulate science and machinery, while they have, at the same time, sought to stabilize institutions and frustrate social change.

In early modern times, there was actually a greater social impulse to institutional changes and to new types of social thought than there was to the progress of science and invention. Between 1500 and 1750, as the Middle Ages came to an end and modern times came into being, these changes were mainly the product of the agitation of the new mercantile middle class.

The middle class repudiated most types of medieval institutions and social thought. It helped along the growth of the national state and transformed it from an absolutistic to a representative basis. It created constitutional government. It developed the ideas of natural law, which placed jurisprudence behind the protection of property. In conjunction with the Protestant ministers, the middle class brought into being the capitalistic system and the eulogy of pecuniary profits.

The middle class took an active part in colonialism and the creation of modern imperialism; developed an appropriate type of political and economic theory to justify the new bourgeois system; and brought into being the liberal political philosophy, justifying revolution against the privileged aristocracy and defending outstanding civil liberties such as freedom of speech, press, assemblage, religion, and the like.

In economics, the middle class extolled the freedom of trade, and the immunity of business from extensive governmental regulation.

These sweeping institutional changes, which we have just summarized, were far more rapid and extensive than the mechanical advances between 1500 and 1750.

Our Simian Heritage

Most of these innovations in economics and politics had been executed by the close of the 18th Century. The system thus created by the middle class tended thereafter to

crystallize and to resist change. The middle class turned its attention from undermining medievalism and absolutism to defending the new social order it had created.

In this way, the very social class which, between 1500 and 1750, had strongly encouraged the transformation of institutions and social thought, became an insuperable obstacle to social change in the 19th and 20th centuries. After it had built the new bourgeois social order, the middle class believed that its interests were linked up with preserving the status quo in institutional life and social thought.

Hence, the business and financial classes threw all of their tremendous power into the maintenance of things as they are in our institutional life. This they did at the very time when they were becoming most enthusiastic in the way of promoting progress in science and technology in the hope of increasing their business profits.

Therefore, from about 1750 to the present time, the dominating social and economic groups in modern society have tended to resist social and institutional change, while at the same time they have encouraged advances in science and technology.

This is a main reason for the strange and alarming state of affairs we face today: namely, the juxtaposition of a thoroughly up-to-date science and technology and a heritage of antique social institutions and social thought which date, for the most part, from around 1800 or earlier. Conditions in our modern

world have, for more than a century, worked strongly, on the one hand, for scientific and mechanical advance, and on the other hand, for institutional stability.

Another important cause of cultural lag is to be found in the fact of our simian heritage. As simians, we are very "handy" and like to fuss and experiment with material things. We are organically interested in gadgets and favor and foster those who can provide bigger and better gadgets for us. In this way, we are naturally inclined to stimulate scientific research and mechanical invention.

The Alternative We Face

On the other hand, the abstract thought and social vision required for conceiving and planning social change come hard for us. There have been countless millions of "handy" humans, but not over a hundred outstanding philosophers during all recorded history. There have been thousands of Newtons and Edisons, or at least of lesser Newtons and Edisons, but only a mere handful of social inventors—Jean Jacques Rousseau, Jeremy Bentham, Karl Marx, Edward Bellamy, Leo Tolstoi, Henry George, and Thorstein Veblen are about the only outstanding ones who readily come to mind.

Further, science and invention have been pretty thoroughly secularized in modern times. We no longer regard a scientific invention or a mechanical improvement as sacriligious. But a quasi-supernatural

aura still shrouds our institutional life. We continue to confer sanctity on our existing form of government, economic life, religious beliefs, and moral codes.

Therefore, while scientists and inventors can proceed with public acclaim, our social reformers must contend with all the horror and savagery which greeted the theological heretic in the Age of Faith. We throw our hats in the air to greet a new giant air bomber, but throw a spasm of terror when confronted by a modest proposal to reform the Supreme Court.

It is quite obvious that no civilization can long endure with such an extensive lag between the two great aspects of its structure and life processes. It is this great institutional gulf which has brought on the fourth world-revolution and forced upon us the necessity of either making constructive readjustments or facing social chaos and disintegration.

In the gulf between machines and institutions is the chief cause of all current difficulties and disasters, from poverty to war and from education to crime, it may seem surprising that so little is being done to remedy this situation. But a little appeal to social psychology and cultural history is sufficient to explain our lamentable defects and failures in this respect.

One of the most conspicuous things about the mental life of our day is the contrast in our attitude toward modernity and efficiency in science and machinery, on the one hand, and in institutions and social thought, on

the other. We desire, and, if we have money enough to buy them, we get for ourselves the latest automobiles, radios, plumbing, and electrical gadgets—at least we did so before war and rationing.

We are humiliated by any evidence that we are behind the times in such matters. The average American would be greatly embarrassed to drive a reconditioned 1923 Dodge touring car through the thoroughfares of our main cities. This would be the case, even if the car were in new condition. The mere fact that its model was two decades out of date would provide sharp humiliation for the owner.

Gulf Is Widening

But the very person who would be embarrassed by a motor car two decades behind the times is likely to demonstrate great enthusiasm, if not sheer reverence, for a constitution a century and a half old, or for an economic system which was already being extolled by Adam Smith in the year 1776. The man who expresses great contempt for the transportation ideals of the horse-and-buggy era usually defends with gusto and conviction political and economic ideas which antedate the stagecoach.

This situation makes it very difficult to do anything to bridge the gulf between machines and institutions. So long as we are proud of our institutions and ideas in direct ratio to the antiquity of their origin and their inadequacy in meeting current needs,

we have less than any incentive to bring them up-to-date. Until we are as much embarrassed by an archaic idea or social practice as we are by an obsolete gadget, there is little prospect of making any headway in the transformation of our institutional equipment.

Far from taking steps to bridge the gulf by bringing our institutions up-to-date, the intellectual attitudes and social values of our era actually tend to widen the gulf.

Our simian traits make the inventor and mechanic far more interesting to us than the social philosopher and social planner. Indeed, the latter usually bore, annoy, or actually alarm the average person, while those who bear new gadgets delight and charm him no end. Hence, mankind is on the alert to encourage new machines and to frustrate, avert, or ignore proposals for social change.

Special Inventors Needed

We provide all sorts of prizes and monetary rewards for scientists and engineers who make important discoveries. Yet, we do not urgently require any additional scientific discoveries and mechanical inventions for the moment, save perhaps in the field of medicine.

What we need more than anything else today are the contributions of the social inventors—those who can bring our institutions and social thinking up to date by devising new and better forms of government, economic life, legal practices, and moral

codes, and improved educational systems.

But we have few or no prizes or rewards for the social inventor. At best, he is likely to be ridiculed as a crank or nitwit. In certain countries, he may be imprisoned or shot. The net result is an extension of the already menacing abyss between our science and machinery and our institutional life and social thought.

It is not surprising, then, to find a sharp contrast between the type of guidance which we demand in the field of science and technology and that with which we rest satisfied in regard to our institutional procedure.

For example, if we are ill we want the very finest medical scientists and surgeons we can afford. We would be inexpressibly shocked at the suggestion that we should call in, for an operation, the family butcher, who might possess remarkable facility as a skillful meat-cutter. In short, when there is an operation to be performed upon the human body, we wish the most competent brain trust which we can obtain.

But, for operations upon the body politic, with problems far more complex and technical than any conceivable surgical operation upon the human body, we let ignorant and venal political butchers hack and mangle the body politic at their will.

Hence, we need not be surprised at the vast amount of bungling which goes on in contemporary political life.

Until we are as willing to call in experts to guide us in our institutional life and its problems as we are to seek the medical services of experts or to request experts to repair our gadgets, there is little hope that we shall be able to deal effectively with the complex problems of contemporary life.

It is obvious that this refusal to accept the aid of technical knowledge and expert direction in public affairs, just the reverse of our conduct with respect to private problems in the scientific and mechanical realm, restrains the bridging of the gulf between machines and institutions.

To sum up, we fail to bring our institutions up to date and adjust them to our science and machines because we do not see any reason for doing so, because most of us do not wish to do so but are rather inclined to venerate the antique in our institutional life, because we encourage scientific and mechanical progress while denouncing and persecuting social inventors, and because we persistently reject the aid of experts in public life, while insisting upon their service and counsel in almost every phase of our private affairs.

'Whether we like it or not, ways will be found to use plant capacity in creating a world of plenty. The artificial scarcity boys—whether capitalists or government economists—will never be able to resist the demand of a world population which

has glimpsed such a world. . . ." Sterling North in Book Section, *Chicago Sun*, April 16, 1944.

A jury is a body of 12 men who decide which side has the best lawyer.

Looking Forward to the 'Good Old Days'

RULES FOR EMPLOYEES 60 YEARS AGO DIFFER FROM TODAY

The past 60 years have changed rules affecting employees, as is shown by the following item, originally printed in the publication, "Joys of Life," and reprinted in "The Advertiser's Digest":

The following rules, vintage of the 1880's, were posted in an Amboy, Ill., store, operated by the founders of what is now called Carson Pirie Scott & Co., of Chicago:

1. Store must be open from 6:00 A.M. to 9:00 P.M. the year 'round.
2. Store must be swept; counters, shelves and showcases, dusted; lamps trimmed, filled and chimneys cleaned; pens made; doors and windows opened; a pail of water and bucket of coal brought in before breakfast. (If there is time to do so, attend to customers who call.)
3. The store must not be opened on the Sabbath unless necessary and then only for a few minutes.
4. The employee who is in the habit of smoking Spanish cigars, being shaved at the barber's, going to dances and other places of amusement will assuredly give his employer reason to be suspicious of his integrity and honesty.
5. Each employee must pay not less than \$5.00 per year to the church, and must attend Sunday school regularly.
6. Men employees are given one evening a week for courting, two if they go to prayer meeting.
7. After 14 hours in the store, the leisure hours should be spent for the most part in reading.

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The Litchfield Press

What Hath Technology Wrought?

by R. F. Novalis

The year 1944 witnessed three birthdays which mark memorable milestones in the progression of America's great technology.

*May 24, 1844—Telegraphy—
100 Years*

It was just 100 years ago that Samuel F. B. Morse, after being turned down repeatedly by 'free enterprise' took his bag of electrical gadgets to the United States Government. The Congress listened. Some of its members saw further than the Mississippi and Missouri Rivers, further even than the business tycoons of that day. They appropriated \$30,000 from the public treasury for the purpose of developing the telegraph. One of America's early technologists was thus permitted to give the world the telegraph.

Annie Ellsworth, daughter of the then Federal Commissioner of Patents, gave Morse an appropriate message that she and her mother had selected from the Bible. It was: 'What Hath God Wrought?' This was tapped out by Morse on the first inter-city line from Washington, D. C. to Baltimore, Maryland, a distance of 40 miles. Thus telegraphy was proven. Its advantages were then realized by private enterprise, for private enterprise, and it was rapidly developed further. The nation's tele-

graph system is now a 99.9 percent plus monopoly, because its technological interconnections require a single control.

A telegraph is an electro-magnetic device that makes use of two basic electrical principles: (1) Electric current flows through any length of wire practically instantaneously, and (2) if this current is purposely interrupted, a code can be worked out by means of which words and sentences can be transmitted over great distances.

In Chapter 22 of *Technocracy Study Course*, the best methods of communication are described as follows:

Technically, there is no question that all communications of the entire Continent could be conducted by telephone if the energy cost indicates that this is not too expensive. It is equally possible to do the same thing by telegraph. . . . Whether the energy cost of handling communication by telephone or by telegraph is less than by mail available data are not sufficient to decide. They indicate, however, that the cost by wire would be at least as small as by mail, if not smaller.

Technologists have hit hard at the

telegraphers' trade. Recently there was the Multiplex machine. This gave many veteran 'key men' a chance to look for other jobs. Now, Western Union's laboratory has developed a 'telegraph office no larger than a mail box.' According to A. N. Williams, president, 'you merely press a button, drop your written message in a slot, and a facsimile is whisked over the wires to its destination.'

May 10, 1869—Transcontinental Railroad—75 Years

Within the years of no more than one man's allotted lifetime on this earth, North America has been spanned by steel rails, not once but many times. Seventy-six years ago James W. Toombs, then a small boy, crossed the plains in a 'prairie schooner.' A year later he joined several hundred laborers, Indians, soldiers and officials at a point 50 miles northwest of Ogden, Utah, and saw the golden spike driven which first tied this Continent together, technologically. On that day the Central Pacific and the Union Pacific railways joined their tracks. Five years before that America had almost been torn asunder by the Price System's politico - financial - business growing pains.

Technology spiked secession permanently at Promontory, Utah, on that historic day, 75 years ago. James M. Toombs is one of six persons still living who witnessed that event, and attended the anniversary 75 years later as an honored guest.

April 14, 1894—Movies—50 Years

The moving picture industry was born in a shoe store at 1155 Broadway, New York City, on the above date. Fantastic and moronic as some of its products are, it is nevertheless an important link in the series of communications inventions that have helped to make America great.

The first movie was called a kinetoscope. It was developed by Thomas Edison. In the early form of this instrument, the pictures were viewed through a peep hole. The peep hole psychology still hangs on grimly in the industry, but there are times when it shows evidence of growing up. Edison's invention has progressed through various stages. The kinetoscope soon became the nickelodeon and that, before men were aware, expanded into the chain theatre system. Then came the talkies and soon after that came technicolor. The next step, television, is on its way. It will reach mass distribution when, as, and if the technical problems connected with it are solved, and the \$5,000,000 a year interference fund of the movie magnates can be outflanked, or by-passed. Television is a union of radio and movie.

Technology, of course, will win in the end. Victory, however, will not be complete until technology can distribute television as well as produce it. And that goes for all the other communication inventions, too!

Are Women the Weaker Sex?

Reprinted from *Section Activities*

A Bulletin of 11834-12 El Monte, California

Always at the Stirrup

Whether the individual species of the animal kingdom walks, swims or flies, the major portion of the function of procreation to preserve its kind belongs to the female.

History reveals that until recently feminine influence has never had any appreciable part of the responsibility for social change, even though women have been the principal victims of economic maladjustments.

It has always been the women who prepared the food, assisted in home duties and raised the children—acting as doctor, nurse, schoolteacher and dietician, as well as mother.

The Indian tribes made pack horses of their women who did all the work. The man was considered a superior being, born to enjoy domestic comfort and hunting, fishing and fighting tribal wars.

The pioneer women in early America were a courageous lot. They helped their men fight the wolves and Indians, assisted in the fields and taught school, first in the little red schoolhouses and later in more modern institutes of learning.

The first modern World War No. 1 revealed that women were indispensable in nursing the wounded, assisting the doctors and sharing the hardships of military life with their men. After this demonstration, re-

luctant political leaders were forced to concede to the women the questionable privilege of voting in an effort to 'purify' politics. They could vote only for one man as opposed to another, the extravagant promises of neither ever being carried out.

Since women demanded still more privileges from life, they were encouraged to form various clubs, organizations and societies to use up surplus energy. In industry they were encouraged to work as bookkeepers and stenographers. They were allowed to take up art, music and to enter the entertainment fields. Women were conditioned to desire frequent changes in clothing styles and the extravagant use of cosmetics, hair dye, nail polish and ornaments.

Woman Is Centripetal

During the depression years, women had to be content with fragile stockings, thin-soled shoes, second-hand clothing and hand-me-downs for themselves and families. Married life must be endured without good warm bedding or matched dinner china. Pots, kettles and pans were of such poor quality as to be a disgrace to this civilization. Women worried along without glasses, dental work or medical care.

Today women are coming into their true social heritage. They have formed the WAVES, the WACS and

many other branches of feminine military units. They are doing their part in serving on draft boards, in rationing offices, driving trucks, buses, taxis, tractors, and operating factory machinery. Women knew their country needed them and volunteered rather than be drafted.

Now that women have had a taste of mechanized living at work, they will never consent to go back to anything other than a technologically efficient 'machine for living' with which to make a home for herself and family.

This will require social change on the North American Continent on a scale never known before. Women will for the first time demand their fair portion of the responsibility in determining the direction taken by that change.

We can expect that the women of America will challenge the old order and demand Total Conscription, not only as the vehicle to bring about the swiftest termination of this war to defeat fascism—but also as the most efficient mechanism by which stabilization can be achieved here in America after winning the war.

Post-War Planners Take Notice

'The cosmic planners, who base their bright new worlds on the words uttered by statesmen or on words written by statesmen on pieces of paper, are building their house on the sands. Those who attempt to regiment the world into a static society are attempting to harness the whirlwind. Not words, but atoms, electrons, molecules and infinitesimal bacteria controlled by men in white in laboratories are what the planners should study. More than rhetoric, they will fashion the shape of things to come.'—Excerpt from an editorial in the *Chicago Daily News*, March 23, 1944.

'I submit that this challenge to use our resources in peace as fully as we are now using them for war will become, after all, the Nation's economic problem No. 1.—Of one thing we can be perfectly sure: sooner or later

the American people are going to lose patience with an economy that can only function fully under the whip of a desperate war; which in peace tolerates unemployment and poverty in the midst of potential abundance.'—Jos. G. Knapp of the Farm Credit Administration, before the National Farm Bureau convention in Chicago, as reported in the *Missouri Farmer*, February 15, 1944.

'The Price System. In the operation of modern economic activity the central position is probably occupied by what is known as the "Price System." This exists in all countries where money is used for the purpose of exchange, which means that it is used practically all over the world today, and indeed during the past several centuries.'—Chapter XXVIII heading in 1942 book, *America In Transition*, by J. A. Kinneman and Richard G. Browne, the latter of the Department of Social Science, Illinois State Normal College. McGraw-Hill Book Company.

Calling All Americans

An Editorial

SCIENTIFIC students of the American scene know that the trend of events in this country has been moving toward a realignment of the social structure. This has been long decreed by the impact of energy and technology and long deferred by political and financial manipulations.

Now we are up to our necks in a total war to the finish to test whether American civilization is fit to survive. After 166 years of national laissez-faire expansion as a Price System economy with its accompanying denial of any positive social direction, we Americans are suddenly faced with the indispensable necessity for the one thing we always spurned in the past.

Up to date, America has been conducting a partial war wherein some citizens enjoy privileges and profit at home while others die on foreign soil. Private enterprise is in control of war production, for a neat consideration, of course, and is largely interested in preparing a favorable postwar position for itself even during the present emergency. Such is the nature of 'free enterprise' but this myopic attitude is hampering the national effort greatly. America cannot possibly attain its maximum of efficiency in the conduct of the war by using the methods of yesterday's successes.

Among the few real shortages existing in America today, the greatest

shortage of all is scarcely even recognized. This is the lack of a unified, overall, National pattern of war operations. Without it we could lose this war. With it, we could never be beaten. The pressure of world events, the capacity of our fascist enemies and the technological nature of modern warfare dictates that American civilization must be mobilized in its entirety and directed according to a scientific design.

Conscription for the Armed Forces alone, while permitting the anarchy of 'free enterprise' in the service of supplies, is not enough. There must be an extension of the principle of conscription. The question is what kind of conscription will we have? Shall it be conscription of labor alone? That is a step toward fascism at home. Shall it be conscription of wealth alone? That is a step toward communism, equally as foreign and repugnant as fascism.

There is a third way, which is compatible with the technological nature of American civilization. This is the TOTAL CONSCRIPTION OF MEN, MACHINES, MATERIEL and MONEY, with NATIONAL SERVICE from ALL and PROFIT to NONE. This is the only real American way to conduct this war and win the peace which will follow.

Total Conscription is Technocracy's Victory Program for America. It is a non-political engineered design of

war operations and calls for an equal and equitable effort from all citizens. It will streamline America for action and liquidate all pro-fascists at home. It will unify and operate the entire system of industrial production at its highest peak of efficiency, produce an abundance of the most efficient mechanisms of war, and at the same time provide a high standard of living for all citizens. Total Conscription will win this war for America without the necessity of selling bonds or levying taxes and without piling up one single additional dollar of war debt to plague future generations. These statements are correct, and this

is the biggest and most important program in America today.

This is a challenge to all intelligent and patriotic citizens. *Technocracy Inc.* calls upon all Americans everywhere to investigate Total Conscription. Every section of *Technocracy Inc.* has qualified speakers available to explain the proposal. Technocracy states that this program deserves your most serious attention. *TOTAL* Conscription of Men, Machines, Material and Money, with National Service from All and Profits to None, is the only unified design in existence that will absolutely guarantee the greater destiny and future of America and all Americans everywhere.

A General Should Know

'Let the officers and the directors and high powered executives of our armament factories and our steel companies and our munition makers and our shipbuilders, and the manufacturers of all other things that provide profit in wartime, as well as the bankers and the speculators, be conscripted . . . to get \$30 per month, the same as the lads in the trenches get. Let the workers in plants get the same wages . . . all workers, all presidents, all executives, all directors, all managers, all bankers, . . . yes, and all generals and admirals and all officers and all politicians and all government office holders . . . everyone in the nation be paid a total monthly income of not to exceed that paid to the soldiers in the trenches.

'Let all these kings and tycoons and masters of business and all those workers in industry and all our senators and governors and mayors pay half of their monthly \$30 wages to their families and pay war risk insurance and buy liberty bonds. Why shouldn't they? They aren't sleeping in muddy trenches. They aren't hungry. They aren't running any risk of being killed or having their bodies mangled or their minds shattered.' Major General Smedley Butler in *War Is a Racket*.

A conference is a group of men, who individually can do nothing, but as a group can meet and decide that nothing can be done.

From The Camera's Eyevew

Technology Goes To War

'There Was The Door To Which I Found No Key'

IT HAS been said that man is the only animal that wages war upon his own kind. Whether this is so or not it is a fact that the history of war is as old as the written records of mankind. The Supreme Court of the United States once defined war as 'every contention by force between two nations in external matters, under the authority of their respective governments,' (Bas v. Tingy, 4 Dallas, 37).

In ancient literature we can read the story of Numa Pompilius (714 to 672 B.C.), the second King of Rome. During his reign, he had a shrine built to the pagan God Janus, the God of gates and doors. Pompilius specified that the gates of the temple should be kept open whenever Rome was at war and closed when peace ruled over the city. Existing records show that between 672 B.C. and 14 A.D. the gates were closed only four times, for brief periods. As a matter of record, since 1600 B.C. up to now the world as a whole has experienced less than 330 years of peace.

There is something symbolic in the specification that the shrine of Janus should be open to the people only in time of war. Perhaps it was symbolical of the fact that the 'glory' of war was the only event making escape from the grinding life of toil and scarcity possible to mankind in that day and age. In war the gates of adventure opened wide and men could march off to loot, rape and kill 'under the authority of their respective governments.'

When peace descended again upon the land and the adventurers returned home to the boredom of social conformity, they found the gates to the Temple of Janus closed, symbolizing their reimprisonment within the structure of a social system based on human toil, hand tools and an everlasting hand-to-mouth scarcity.

War Has A Thousand Doors

Prior to the middle ages and as far back as records indicate wars were waged by professional armies. These armed forces were practically self-sustaining. They fabricated their own weapons and lived off the lands and peoples they conquered. There was no necessity for anything but moral support from the home front. Gradually, however, as new weapons were introduced the problem of supplies became greater in magnitude and complexity. Each new device introduced on the battlefield called for a better one to offset it. The crafts of the armorer and gunsmith became important. Armies grew larger and their food supply necessitated replenishment from the home land.

During the Napoleonic wars 1795-1812, at the beginning of the industrial revolution, one craftsman was required at home to supply every two soldiers in the field. War had always thrown its doors open to adventure, now new factors began to cross its threshold. Technology stepped through in 1795 when Nicholas Appert, a Frenchman, discovered the process of canning food which Napoleon used to help supply his armies.

The American Civil War gave a tremendous boost to industry and technology. By 1870 the service of supplies to armed forces had increased in magnitude to the point where it required one craftsman at home for every soldier in the field. Technology was moving through the open door of war to a greater extent. The first world war 'to save democracy' spurred the rise of aviation. During that holocaust it required five factory workers at home to supply one soldier at the front. The first handwriting by technology appeared upon the wall then, but only a few could read it. In 1944 it is estimated that the labor power of 18 skilled workers at home is necessary to supply and maintain every soldier in the Armed Forces. Of course, there aren't 18 skilled workers for every soldier but there is a magnificent technology with the almost unlimited labor power of America's extraneous energy at its command. This is something our forefathers knew nothing about. Technology is now wedded to the ancient art of war and never the twain shall part. See p. 35.

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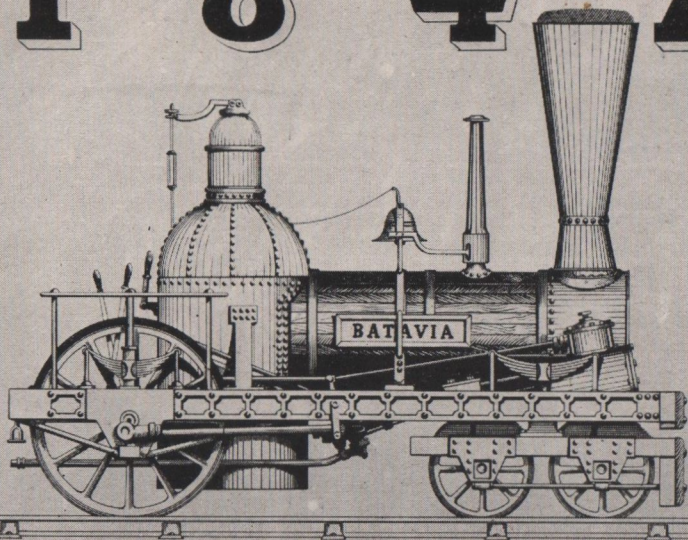


Photo: Courtesy N. Y. Central System

One of the first locomotives built in America. It was completed in 1838 by the Rogers Locomotive and Machine Works, Paterson, N. J., for the Tonawanda Railroad. The form of firebox shown here, semicircular at the rear part with a hemispherical top surmounted by a dome, was used as late as 1857. The Batavia was typical of early railroad technology. It was good enough for grandpappy's time. Today it wouldn't even be capable of switching freight cars around a small town siding. Good old Batavia.



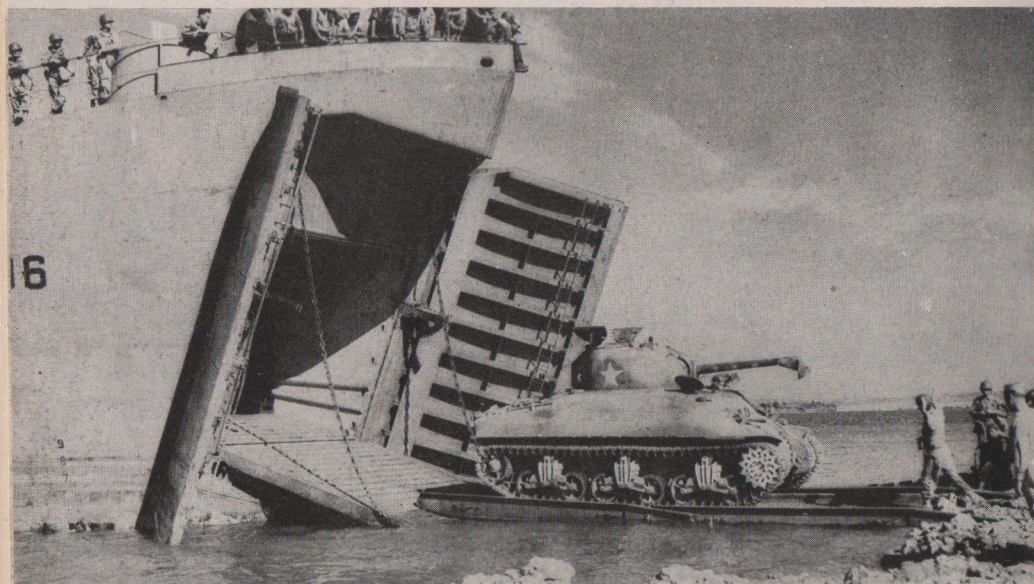
Photo: Courtesy The Pennsylvania Railroad

Here's the latest in railroad technology, two way electronic train telephones, not straight radio. It permits talk at will between locomotive and caboose, between trains miles apart and with distant block operators. The carrier current system is used. The current jumps the distance from rails or wire to the receiver it is intended for. Others are not affected. It was installed recently on a branch of the Pennsylvania R.R. Technology deflates the factors of human error and ego. Hurrah!



Photo: Courtesy United States Rubber Company

Oil-resistant synthetic rubber lifesaving suits marching off the production line. To the Merchant Marine they come in mighty handy sometimes. The drawstring closure at the top (head covering not shown), keeps it snug at the neck, leaving only the face exposed. The harness device around the waist is to lift oil covered seaman from the water. Made of one piece they keep the wearers dry. Buoyancy is supplied by a life vest worn underneath. On the land and on the sea, technology hastens victory.



Official U. S. Navy Photograph

War opens the door wide. Here's a closeup view of the LST (landing-ship-tank). This is a beautiful illustration of naval technology. Before the war there was no such a boat as an LST. Neither did some naval designer dream it up overnight to meet the emergency. The necessities of amphibious warfare dictated the LST. The designer must conform to the physical needs and limitations. Will we ever learn to attack social problems with this object lesson in view? The principle is the same.

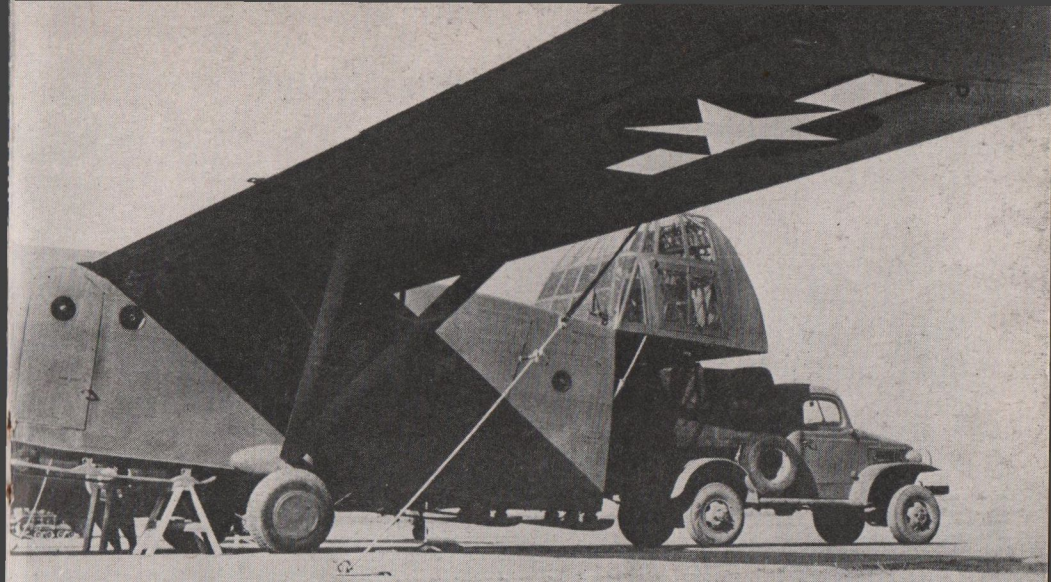
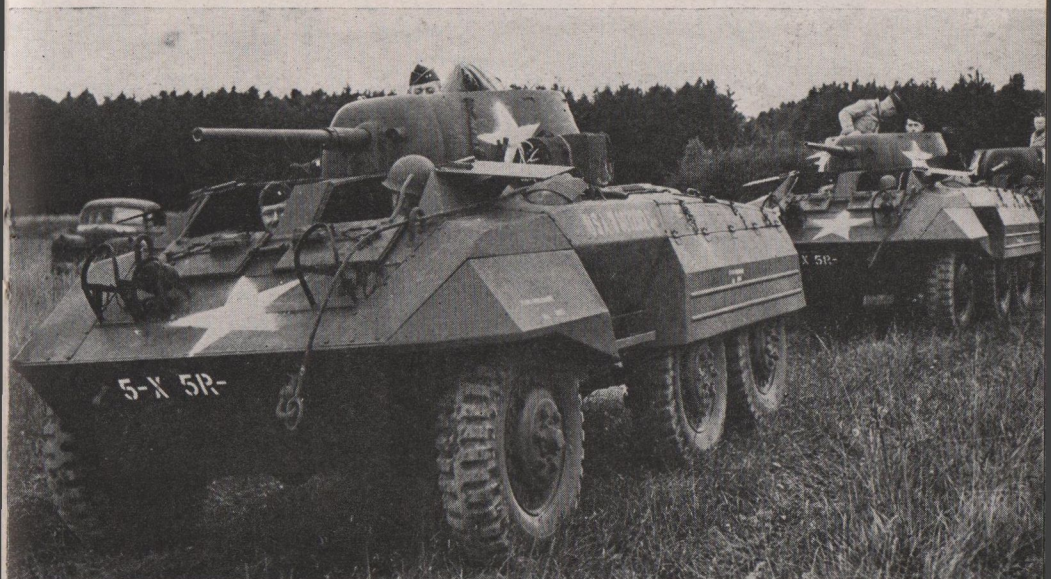


Photo: Courtesy U. S. Army Air Forces

Literally riding on the wind. The Army's newest glider YCG-13. It will transport more than 24 infantrymen with full packs, mortars and machine guns. Two jeeps with their crews or a medium truck with accompanying equipment may be loaded and unloaded through the nose. The YCG-13 is now in mass production for the Air Force Troop Carrier Command. It weighs about four tons empty, and is built largely of plywood. On the sea and in the air, technology is everywhere. Ubiquitous is the word.



Official Signal Corps Photo

This new Army combat reconnaissance car M8, designed by the Ordnance Department, combines the speed and maneuverability of an automobile with the punch and armored protection of a light tank. The M8 weighs 8 tons and is capable of high speed over rough terrain. It mounts a 37mm cannon and a 30 caliber machine gun. Notice the low silhouette and high ground clearance. The tough front end simply pushes down and rides over underbrush and trees. A crew of four handles the M8.



© 1944, Chicago Times, Inc.

*"We know how they fight—but the question is
how will they vote?"*

Photo: Courtesy The Chicago Times Syndicate

ONE VOTE THEY WON'T HAVE TO WORRY ABOUT



Photo: Courtesy The Nashville Tennessean



Official Signal Corps Photo

U. S. Army adopts 9-lb. 'baby.' The M3 submachine gun takes .45 caliber pistol ammunition, holds 30 rounds and fires either one shot at a time or at the rate of 450 a minute. Fabricated mainly from stamped metal and screw machine parts no tools are needed to take it apart. It is completely enclosed, mud-proof and has no external moving parts. The stock is the ramrod also. The M3 is used as a pistol or shoulder gun. After 49,600 rounds of test firing its accuracy improved. Some baby!



Official Signal Corps Photo

Indian fighting has its place in war too. American soldiers are taught to take advantage of every bit of natural concealment such as bushes, tall grass, trees, rocks and breaks in the terrain. When camouflage of the person is used also the resulting picture is likely to be very misleading. There are at least 29 soldiers concealed in this picture. How many can you see? Don't strain your bifocals trying to find them. Take the Army's word for it. Camouflage is the technology of concealment.



U. S. D. A. Photo

Carry me back to—what? Human toil and hand tools? Here the hands are the tools. Cotton is the largest employer of agricultural labor. Up until recently King Cotton has defied mechanization. Cotton picking is the greatest single source of women and child labor in America. There are about 9 million people in the 2 million tenant families of the 10 cotton states. Their lot is largely spent in raising and picking cotton. It's a tough life, but technology is making it easier. Oh Happy Day!



Photo: Courtesy International Harvester Company

This mechanical cotton picker will pick as much cotton in one day as 70 men. At present wage rates it costs about \$30.00 to pick a 500 lb. bale of cotton. This machine cuts that cost to about \$1.00 a bale. Figuring overhead, amortization, depreciation and downgrading caused by dirty cotton the saving is at least \$20.00 a bale. 'Weep no more my lady—' You will soon be released from the bondage of toil and scarcity. Politics can't do it; but technology is making it a categorical imperative.

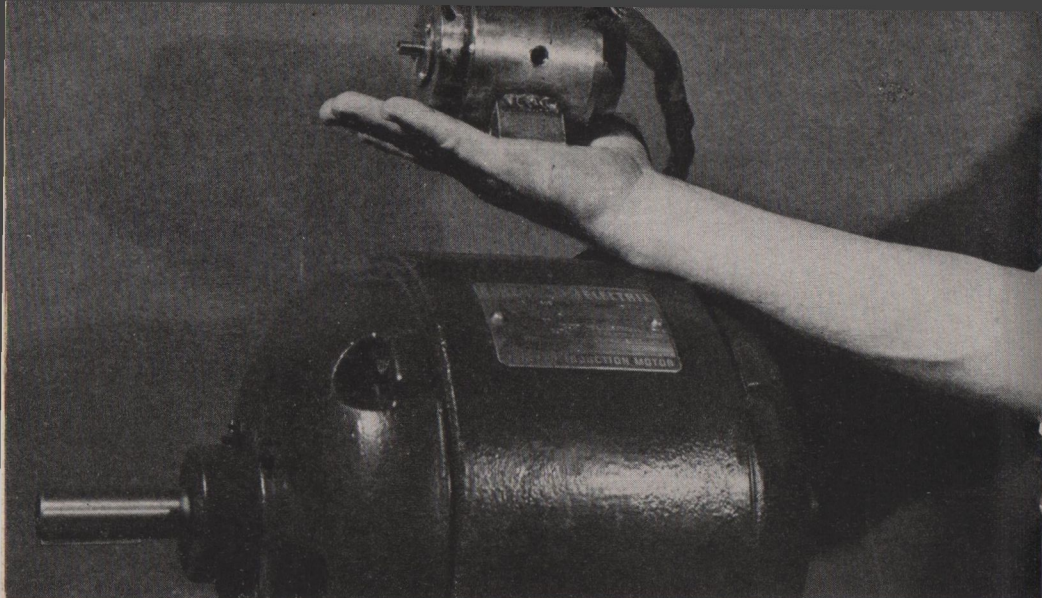
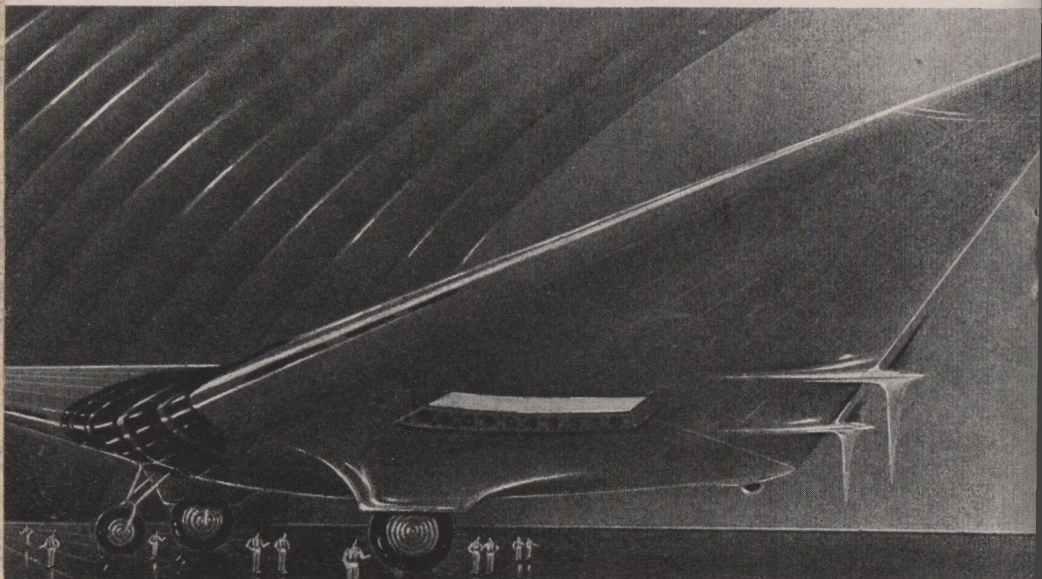


Photo: Courtesy General Electric Company

Only 1/15th the size and weight of the average 3 hp. motor this mighty 7 lb. midget develops the same horsepower. It operates at 120,000 rpm, 2000 every second. This is 65 times the speed of the average 3 hp. motor, or 13½ times the speed of sound. It is water cooled, consuming ½ gallon per minute. Oil-mist lubrication type bearings are used. If automobile wheels could turn at the same speed, cars could travel 10,000 miles per hour or 165 miles a minute. Wow! What's Next?



Design Patented by Jacques Fresco

This is an original design depicting a huge Flying Wing of 70 tons capacity. It will probably be of the pusher type, using dual rotation propellers or jet propulsion. The undercarriage and power plant are housed within the aerodynamically designed wing. Flying Wings derive stability by means of a 'washout' arrangement. The wing tips have a slight degree of twist downward. Turning is effected by the ailerons. Trans-Pacific warfare demands long range Flying Wings. What are we waiting for?

'Am I My Brother's Keeper?'

Continued from age 26

Old King Pompilius could not have foreseen that the warfare of small self-sustaining armies would become the total, technological war of today wherein the entire home front has become an integral part of the war organization. He viewed the world around him within the framework of the simple handicraft-agrarian culture of his time. This is the best that can be expected of any man, that he view the problems of his day within the context of events current at the time.

Today the framework of a high energy civilization is evident on all sides. Warfare, now, is waged with the tools of social change. By this we mean that the processes and mechanisms introduced during the war have a terrific impact upon the social structure when it contracts into a state of peace. The factors of social change grow steadily more portentous. And, what is the social picture today? Nearly all our 'best minds,' our 'statesmen,' our 'tycoons' of industry, our 'leaders' in education and the professions and all the 'respectable' and 'nice' people of the 'better classes' are sound asleep. They view the social problems of today within the context of events that occurred a thousand years ago.

Business First

Price System methods set up a preferential distinction between industrial production on the home front and National Service in the Armed Forces. Industrial production of war is regulated by merchandising practices and consecrated to private profit, in spite of the fact that this production is an integral part of the hostilities which are publicly conducted and publicly borne. A thousand years ago it was not necessary for the people at home to give anything but moral support to their kinfolk who had gone off to war. Today, technological war calls for a complete coordination between the entire industrial machine and all military operations. There must be topnotch efficiency all around and equality of effort and sacrifice. The highest morale stems out of a common objective.

Oh, yes! We will win this war. There has never been any doubt about that. But the war will not be won because of the \$8,500,000,000 of corporate net profit made in 1943; it will not be won because of the \$2,130,000,000 spent on advertising in 1943; it will not be won because of the illicit billions raked in on the black market; it will not be won because of the 1,900,000 workers who laid down their tools in the 3,750 strikes in 1943 for 1/7th of one percent of the total time worked; it will not be won because of the juvenile delinquency mushrooming in every town and city; no, it will not be won because of any part of the nature and characteristics of the Price System, but in spite of all these. American technology and fortitude will bring home the bacon. There has never been any doubt about that.

'No Less Renown'd Than War'

But, after every war comes a peace. Then, symbolically, the gates of Janus swing closed. Then, soldiers return home, war industries close, war workers cease working at war work. Then, private enterprise must, perforce, return to its time-tried rackets. Then, it will again have the freedom it is forever bellyaching about to demonstrate for the umpteenth time its functional incompetence to distribute an abundance. Then, all the human components of the land will be reimprisoned within the stifling framework of a social system, dependent on technology and extraneous energy, but operated by handicraft-agrarian methods handed down from the time of old King Pompilius. When peace again descends upon this fair land, the impact of technology will be reversed, like a boomerang, from the open door of war, and directed with shattering force upon the social structure at home. The compulsion for social change will descend upon America with cataclysmic certainty.

As sure as the sun will rise above the eastern horizon tomorrow morning, the trend of physical events instituted by science and technology, its pace and power accelerated by war, will proceed inflexibly to its rendezvous with this generation of Americans. There is no escape for us from that fact. Total war will either be followed by total peace or social disintegration. The signs all point in one direction. The tools of social change are sharp and they cut in both directions. America must be prepared with a program in harmony with the trend of events.

Now We're Burning The Air

Story of Jet Propulsion Planes

by Pvt. Arland R. Meade

Rocket motors, gas turbines and jet propulsion planes have been much in the news lately. They are all related to each other and they are all prime movers. Any machine that makes the initial conversion of energy into work, or motion, is a prime mover. There are only a few prime movers in existence, all told, and this sudden addition to their number is highly significant. Two of these, the gas turbine and the jet propulsion engine, are sure to replace less efficient prime movers. Here's the story of the Jay-Pee up to date.

The Greeks Had A Word For It

EVERY American child who has seen a fourth of July rocket streak into the sky or the sudden burst of motion of a free balloon rapidly losing its air through its stem has seen the form of propulsion of the much discussed jet-propelled airplane. The rocket, the deflating balloon and the jet-propelled airplane all move because of the thrust developed by a mass of swiftly moving air or gas against the surrounding atmosphere.

The propulsive power of a jet has long been known—for more than 2000 years, at the very least. The principle was demonstrated in 150 B.C. by Hero of Alexandria in the Temple of Serapis at Athens. The original jet-propulsion machine was called an Aeolipile.

The Aeolipile was basically a small globe supported above a boiler on two trunnions. Steam from the boiler entered the globe under pressure through one of the supporting trunnions and made its exit through two nozzles on opposite sides of the

globe. As the steam escaped through the nozzles against the atmosphere, a thrust was developed that caused the globe to spin on its axis. The Aeolipile was the first steam engine, centuries before the invention of the reciprocating type and the steam turbine.

The principle is old; the practical use is so new that it is not quite here yet, except in nature. The squids, a group of marine invertebrates, closely related to the octopus and the clam, move by jet propulsion. Squids vary in length from a few inches to several feet. In general they have streamlined, tapering bodies with a small head surrounded by tentacles. The squid sucks water through an opening near the head into a mantle cavity surrounding the body. Then with powerful muscles the squid compresses the mantle, ejecting the water through a jet with propulsive force, sending itself through the water in a darting movement.

Hero's Idea Exhumed

About 18 centuries after Hero built

his jet-propelled steam engine, Sir Isaac Newton experimented with a jet-propelled carriage. In this case the carriage consisted chiefly of a large boiler with one cannon-like jet at the rear.

The birth of aviation in the 20th century brought a revival of interest in jet propulsion, yet while the planes using a propeller became more and more efficient and versatile, the experiments with jet propulsion led to a series of failures.

For instance, in 1908 a French inventor named Lorin proposed using a reciprocating engine as a jet device by allowing the exploding gases to escape from the cylinders through funnel-shaped outlets instead of driving pistons on a crankshaft. This arrangement combined both the disadvantages of the reciprocating engine and the jet type. It was a total failure.

Another Frenchman, Morize, in 1917 suggested the three basic parts now found in any jet propulsion unit: An air compressor, a combustion chamber, and an expansion chamber with a nozzle outlet. Morize introduced an air intake at the forward end of the apparatus for taking in the air for subsequent compression and combustion.

That step marked the major difference between a jet-propulsion device and a rocket-propulsion device. The propulsion itself is the same for both, but the sources and development of the propulsive reaction differs—and here enters the story of combustion and energy.

A Rocket Is a Chemical Reaction

The rocket contains within itself all the fuel (the energy source) plus all the oxygen for the combustion of the fuel. Discarding the powder combustion rocket as of small use, although airplanes have flown by such propulsion, we find the most suitable fuel for rockets to be the liquid hydrocarbons, as gasoline, kerosene or alcohol. The fuel and liquid oxygen are fed together into a simple combustion chamber and ignited. The resulting gases pass at high speed out a nozzle or several nozzles, pointing toward the rear. The impact of these gases against the atmosphere provides the thrust that moves the rocket. The combustion in the chamber is continuous until the flow of fuel ceases.

The device now referred to as 'jet-propelled' differs from the rocket in that it does not carry its own supply of oxygen for the combustion. The fuels can be the same, as can be the exhaust outlets, but there are greater possibilities of range and pay load because the oxygen is taken from the surrounding atmosphere.

In structure, the jet-propulsion device is more complicated than the rocket, but both are extremely simple compared to the conventional internal combustion, propeller-driven plane. The rocket has no moving parts at all, and the jet-driven plane has only two: A rotary blower to compress the air taken in near the front of the fuselage, and a gas turbine which uses some of the products of the combus-

tion chamber as the power source for the operation of the compressor before allowing the gases to escape rearward to the jet.

The jet-propelled airplane, which was developed chiefly from the experiments of Captain Frank Whittle, R.A.F., best demonstrates the most successful type produced so far. It was first flown in Britain in May 1941.

Jet Propulsion Is a Machine

Basically, the mechanism is as follows: Air is scooped into the plane near the front of the fuselage through one or more large funnel-like openings. This intake may be directly at the nose of the plane or through open-front 'blisters' at the sides of the fuselage. The intruding air is sucked into a rotary impeller, which compresses the air and forces it into a helical combustion chamber where it is combined with fuel by an injector. In the same chamber the continuous combustion takes place. The expanding gases pass through a gas turbine which drives the impeller-compressor before escaping rearward to furnish the propulsion. Therefore, part of the energy is used in operating the compressor.

It is possible, as in the Caproni-Campini plane, which was flown in Italy, to use an internal combustion engine to operate the compressor. This, however, added so much weight and bulk to the apparatus that there was little capacity for pay load. Having the impeller driven by a gas turbine is simplicity itself, for the tur-

bine and the impeller may be operated on the same shaft in a continuous motion with a minimum of moving parts. This is the same arrangement found in the turbo-supercharger, in which the engine exhaust gas operates the turbine.

The remaining structural part is the exhaust nozzle. This must be large enough to allow the passage of sufficient mass of air to produce enough thrust to propel the plane. In principle this is the same as the function of the propeller, but with different velocities and masses. The thrust produced by the propeller is due to the scooping of large volumes of air and forcing them backward at greatly increased velocity. Typically, the jet propelled planes send a much smaller mass of air backward at a much greater velocity. The thrust of the jet can be calculated from the mass of air moved per second and the increase of velocity of the air, that is, the difference between the air speed of the jet and of the air being sucked into the mechanism. Small diameter jets do not produce a worthwhile thrust even at very high velocities due to insufficient mass of air moved.

The mass in the jet can be increased by use of augmentors placed around the exhaust nozzle. These augmentors are simply Venturi-shaped rings, used to suck in additional air to add to the mass of the jet.

Because of the simplicity of mechanical design, an analysis of the function of the entire apparatus can be made on a few principles of

physics. The first that may be considered is Newton's law that action and reaction are equal and opposite. Obviously then, enough mass of air must be forced out the nozzle to give enough thrust against the atmosphere to provide opposite thrust enough to propel the plane forward. The rate of fuel used for combustion must be great enough to provide a large volume of combustion products, i.e., gases to provide the thrust. That such a thrust can be developed is proved conclusively by the speed of the Bell Interceptor Fighter which has been flown in this country between 500 and 600 miles per hour, using two jet engines. This is about 100 miles faster than level flying speed of any other type of airplane.

Enter Thermodynamics

The efficiency of fuel use is the second major factor. In order for the jet-propelled craft to compete with propeller driven types, an approximate equality, at least, in efficiency of fuel use is imperative.

At first hand it appears that such is not the case. Alexander Klemin, writing in *'Scientific American'* April 1944, states:

... the fuel consumption per horsepower hour is far too great for the engine to be used in bombers or any craft, for that matter, in which sustained operation may be required.

He refers to the net results of fuel use in terms of movement, not in terms of efficiency of combustion. There are two types of efficiency to be consid-

ered in an engine designed for aircraft use: Thermodynamic or internal efficiency and propulsive or external efficiency. The former is the ratio of the power developed to the total energy in the fuel.

The thermodynamic efficiency of the jet propulsion engine is much higher than that for the internal combustion engine. Combustion can be complete. Chemical losses are eliminated and with a long exit nozzle, much of the heat energy is converted to kinetic, thereby reducing exhaust losses. Internal efficiency of the jet propulsion engine has been estimated up to 70 percent by German writers.

This internal efficiency is approximately double that of the best internal-combustion engine (the Diesel) which has chemical losses from incomplete combustion, bad mixing of gases, loss of fuel through exhaust, cooling losses through the walls, and mechanical losses.

The Competitive Factor

On the basis of propulsive or external efficiency, the situation is reversed with the jet propelled craft being much the less efficient. The efficiency of a controllable pitch propeller may be as high as 85 percent with the efficiency of the jet at an estimated 10 percent. This is true because the gases come out too fast, thereby carrying away too much of the energy of combustion.

There are two methods of increasing the external efficiency of the jet. First, great quantities of air can be mixed with the air in the jet to decrease the velocity and increase the

mass. The second is to design the apparatus to travel at extremely high speeds. As the speed of the plane increases, the jet-type power plant increases in efficiency while the propeller-type decreases. Higher speeds are possible in the stratosphere, indicating that the future of jet-propelled aircraft is far above the clouds.

There are two functional factors causing the increased efficiencies at high altitudes, with special advantages over the propeller driven plane. A propeller in rarefied air loses a great deal of its efficiency due to reduction of the air-stream mass moved by the propeller. Due to the function of the compressor, this effect is minimized in the jet operation. Secondly, there is an additional advantage due to the great expansion of effluent gases in free air. That the efficiency of the plane increases with higher speeds can be shown by using the formula for propeller efficiency:

$$E = \frac{2v}{V + V'}$$

Where E is efficiency, V is the velocity of the plane and V' is the velocity of the jet.

Using a speed of 300 miles per hour for the plane and 1500 mph for the jet, we find:

$$E = \frac{600}{1800} = 33.3 \text{ percent efficiency}$$

With a speed increased to 600 mph we find:

$$E = \frac{1200}{2100} = 57 \text{ percent efficiency}$$

That a speed of 600 miles per hour

with such a plane is within reach was amply demonstrated by Major General William E. Kepner of the 8th Air Force and test pilot Robert M. Stanley, former national glider champion, in flights made in a plane developed by Bell Aircraft and General Electric based on designs of Wing Commander Frank Whittle of the R.A.F. In the twin-jet plane (resembling the P-38) the pilots flew to a top speed of between 500 and 600 miles per hour, according to the *London Daily Mail*. Military censorship will not permit the release of exact figures. It was on October 1, 1942, that the first successful flight in America was made.

While comparable speeds have been made in power dives with propeller-driven ships, in ordinary flight the present-day propeller-driven plane begins to be stymied by the effects of compressibility at speeds much above 450 miles an hour. At these high speeds there is a rapid falling off in the efficiency of the propeller.

When we look at the present displacement of the jet-propelled airplane in general, it is not over-optimistic to say that it makes air travel possible at speeds far greater than with conventional planes. That much is certain. Without doubt, the jet motors can be adapted to the aerodynamic superiority of the Flying Wing, which is the design of the future—the very near future, if engineers were permitted to build the best regardless of whose financial toes got stepped on.

Vinegar For Stockholders

A summary of pros and cons to jet propulsion airplanes would read as follows:

Among the cons would be: (1) very low external or propulsive efficiency, (2) high fuel consumption per horsepower hour, (3) difficulty in securing enough mass of air and gas for an efficient jet, (4) excessive use of space by the apparatus within the plane (although simple it is bulky) and (5) generation of high heat in the combustion chamber which may be dangerous at times. The main drawback is still simply the efficient use of the fuel.

The list of pros is longer. They include: (1) extreme simplicity of the engine, with only two moving parts in place of hundreds, (2) tremendous speed, especially at high altitudes, (3) lack of noise and vibration due to the fact that all moving parts are rotary, (4) reduction of pilot fatigue due to quietness of the cockpit and absence of vibration, (5) better vision because no propeller, motors or other equipment need be in front of the cockpit, (6) utilization of many kinds of low grade fuel, (7) high internal or thermodynamic efficiency, (8) absence of many losses of the reciprocal engine, such as mechanical, exhaust, cooling, etc., (9)

elimination of high gear and complicated retractive mechanisms now used to keep propellers from contact with the ground, and (10) possibilities of building the functional parts of the apparatus into the structural part, making greatly increased space for pay load. To this it may be added that the jet plane will play hob with the skill of pilots. It is simpler to fly and many of the propeller-type airplane's instruments will not be needed. The Jay-Pee dispenses with more than a dozen gasoline-engine controls. Technological displacement of skill is at work in aviation also.

Whatever the status of the jet-propelled plane as this article is being written, be assured that it will be different tomorrow. Technology is dynamic. The rate of technological change is in a period of rapid acceleration. All major nations, including our fascist enemies, have built and flown such planes. For the safety of America, it is imperative that no nation surpass us in scientific development. On that count we have little to worry about.

On the other hand from a social consequence point of view there is a great deal to worry about with regard to America's advancement in science and technology. But that's another story.

'Dollar value (of airplane freight) is relatively unimportant in wartime. Recently we turned down an application for priority to import by air a small amount of luxury material worth \$1,500 a pound, and we are

now giving top priority to large amounts of strategic raw materials worth less than 5 cents a pound.' Lt. Langdon P. Marvin, of WPB air-cargo priorities committee. (*Chicago Daily News*, 2/26/44.)

Add Two and Deduct Three

Prosperity In Reverse

by Charles J. Loignon

'Parting Is Such Sweet Sorrow'

POLITICAL and technological trends have come to the parting of the ways. While politics still pursues the infantile course of crying and stamping its feet when it reaches a closed gate, technology has graduated from the school of science and is solving the productive problems of society in spite of organized opposition. Technology is veering away from its opposition and graphically is turning up its nose at the stumbling, plodding, obstructionist course of politics.

Political hysteria is especially evident in the vague postwar plans which are rendered obsolete by technology even before the ink dries on the print.

Postwar plan #000AC1,389,674, B.C. is now rendered obsolete by Baruch's master plan. The expressed aim of Bernard M. Baruch and John M. Hancock, White House advisers and veterans of industrial mobilization in both world wars, is to avoid economic chaos in a period of readjustment from war to peace and to create instead an 'adventure in prosperity.'

They say there is 'no need for a postwar depression. Handled with competence, our adjustment after the war is won should be an adventure in prosperity. Finally, while the pro-

ducers should be restrained from excessive profits during the war, the workers as long as hostilities are on should refrain from strikes. No grievance, however just, should be permitted to slow our march to victory.'

From the beginning of history politics and confusion were bed partners, so where can one see the miracle of competence in politics? The disastrous adventures of politics are too numerous to entice many followers. Unless 'producers' and 'excessive profits' are defined and clarified, any political action in our present code of conduct will suit the interested parties. Moreover, if these restrictions are intended only for the duration of hostilities, then the postwar period promises to be the greatest free-for-all scramble for profits and existence—no holds barred.

To Chisel or Not To Chisel

After the war Uncle Sam is urged to 'get out of business' and create two offices: One a 'war director' to deal with demobilized war veterans and war factory workers; the other a 'surplus property administrator' with full authority to dispose of the Government's billions of dollars' worth of war materiel from factories to airplanes.

American citizens not in defense plants or in military service are due

for a shock. If the promises of politicians materialize in the postwar period, the average citizen will be left out in the cold in a mad scramble for jobs. Soldiers and defense workers shall have preference. Lo! The poor civilian! Maybe they can all turn chiseler, like the following two cases:

Recently, 80,000 batteries were released as salvage material in the Ninth Service Command comprising Ogden, Utah. James H. Harberton, Ogden mortician, and his brother Jack Harberton bought half of those batteries for \$80 and resold for \$20,000. Warren Grothe Bountiful bought the other half for \$50 and resold for \$7,200. The OPA found no violation of price ceiling regulations and the buyers did not believe their profits excessive.

The field seems to be wide open in soup plates too. The Army soup plate (identified as 63-C 3255) is a standard, indispensable article. Last Spring the Army found a surplus of 50,000 soup plates in its inventory. Following regulations, inquiry was made whether any other Government department could use them. The answer was no, so Army officials sold the soup plates for 12½ cents a piece. Some time later Army officials (whether the same or others, the record does not say) ordered another 30,000 of the same soup plates at 17.8 cents a piece. A little bit after this they discovered another surplus of 187,000 soup plates. After more routine inquiries, these were sold for 9 cents a piece. In December, the Navy ordered 110,000 soup plates.

Presumably, the soup plate business is still flourishing.

Don't Tell Me That Old, Old Story

While the service men struggle in jungle mud against insects, reptiles, beasts, disease and a cunning vicious enemy, their civilian obligations are frozen. If and when they return, they will find a declining labor market and a contracting wage. Simultaneously, the drop in prices will increase the value of the dollar. Against these odds, these crippled, sick and exhausted men will be expected to renew their struggle, not only to meet their frozen obligation with 'bigger' dollars and reduced wages, but to catch up with those who got a head start up the financial ladder while they were fighting—for what?

While technology is constantly reducing the man-hours per unit of production, the mounting production record made possible by the availability and use of ever greater amounts of extraneous energy point out the direction of physical trends. In spite of the cost-plus system, the inevitable consequence spells a reduction of total man-hours.

While production is important, the time and place of delivery are just as important. The attempt to lure a large segment of our population into 'victory gardens' and back to the primitive hand methods, while the same effort would produce equipment that would multiply their composite results a hundredfold, is sheer nonsense. Likewise, the great number of people employed by Uncle Sam for

the purpose of restricting production by controlling price, such as the AAA and the OPA, if put to productive work would enlarge our less bountiful commodities to such an extent that it would remove the necessity for their existence. While technology to producers means greater capacity at a reduced cost per unit, to employees, it means a red light to their services.

When did American private enterprise become so imbued with philanthropy that it is willing to feed every savage on the globe while it

fits the American people with a strait jacket? Is America going to try to maintain a financial and political system which is incompatible with physical capacity, or is it going to adapt itself to physical trends?

Technocracy is urging Total Conscriptio of Men, Machines, Materiel and Money as the only means of utilizing our full capacity of production in order to assure victory and a high standard of living, without favoritism or drudgery. How about getting that urge yourself?

Bring Your Charts Up To Date

America's industrial production is the basis for the munitions of war as well as the materials of peacetime, as Europe and Asia's fascist nations are learning the hard way. That being true, the charts in Technocracy's Study Course, of basic trends, hold as much meaning now as when the book was first printed. To bring some of the charts up-to-date, as well as to indicate some other data, here are official 1943 production figures:

Pig Iron.....60,900,000 tons
 Railway Freight..725,000,000,000 ton-miles
 Railway Mileage.....230,000 miles
 Total Coal Mined.....649,000,000 tons

All these are all-time output records except for railway mileage, which is a new low!

Other 1943 units of production from American mines and factories are:

Oil1,503,000,000 barrels
 Natural Gas...3,369,000,000 cubic feet

Aluminum920,000 tons
 Magnesium185,000 tons
 Steel89,000,000 tons
 Copper1,087,000 tons
 Nickel (Canada)265,000,000 lbs.
 Plastics750,000,000 lbs.

Our steel output compared to our enemy's production, is 70 percent greater. And in oil the entire North American Technate Area produced 1,765,200,000 barrels last year to Germany-Japan-Rumania-Netherland East Indies' grand total of 67,000,000 barrels! Of course, they produced 5 or 10 times that much synthetically, but we *still* have most of the production.

An article on Canada's modern technology which was to have appeared in this issue came in too late for inclusion. It will be in the next issue.

Preamble to Total Conscription

by Olga Sawyer

'We, the people of the United States, in order to form a more perfect union, establish justice, insure domestic tranquility, provide for the common defense, promote the general welfare, and secure the blessings of liberty to ourselves and our posterity, do ordain and establish this Constitution for the United States of America.'

We Hold These Facts to Be self-Evident

IN order to form a more perfect union, we must first of all have national unity. That means one patriotism, one objective, one direction. Today that means winning the war. National unity demands the merging of all divisionistic elements into the national economy as a whole.

To establish justice requires National Service from All and Profits to None. Justice is only a mawkish mirage as long as some Americans get rich through war profits, war wages and war racketeering, while other Americans spill their blood in defense of the country.

To insure domestic tranquility, all citizens must serve on the same basis of pay as the Armed Forces, with the same standards of food, clothing and health protection and the same allowances for all dependents regardless of rank or social position. When the needs of the people are adequately provided for, domestic tranquility will ensue.

To provide for the common defense permanently calls for a three-year Continental Defense Training program for both males and females

from 18 to 21 years of age. It requires a fully equipped Armed Force of 1,000,000 engineer-mechanic-soldiers; an Air Force of at least 50,000 Flying Wing Super-Bombers, plus other planes. It also calls for an adequate, modern two-ocean navy. Finally, there must be a fortifications system extending to the outlying islands of the Atlantic and Pacific Oceans and reaching from the North Pole to the northern rim of South America. Each branch of Continental Defense shall have a separate command over its particular function. The entire military, naval, air force and fortifications commands shall be under the supervision of a General Staff, with the Constitutional Commander-in-Chief in supreme command.

We can promote the General Welfare only when we take the 'pay' out of patriotism, and put love of country above politics, profit and the preferential advantage of ourselves or any minority groups.

To secure the blessings of liberty for ourselves and our posterity requires the 'quick freezing' and Total Conscription of all Men, Machines, Materiel and Money into National

Service for the duration and six months thereafter. Otherwise our children's children's children will be shackled to a mountain of debt so high and so burdensome that they will never have the faintest glimmer of what the blessings of liberty mean.

The dollar bill in front of the eyes

of the American people has obscured their vision for four generations. When that has been completely removed and Technocracy's Victory Program put into effect, then, for the first time, will the statements in the Preamble to the Constitution have been both *ordained* and *established*.

Offsprings Of 'Free' Enterprise

An area of cropland, equal in size to the States of Maine and New York (50,000,000 acres) has been 'ruined for any further cultivation' by erosion. 'Today it is producing no food for the war and tomorrow it will produce no food for the peace.' The ruined area equals 'at least one-eighth of our total present cropland. That is not all. Erosion has almost ruined another 50,000,000 acres of cropland. Just about all the topsoil is gone from this land and it is riddled by gullies. Still another 100,000,000 acres of cropland have lost more than half of their productive topsoil. And on yet another 100,000,000 acres of cropland, the erosion process is under way. In short, erosion has already damaged more than two-fifths of all the cropland in the United States.'—Extracts from a talk by Secretary of Agriculture Claude R. Wickard before the Rotary District Conference at Reading, Pa., April 17, 1944.

Note to the above:

Why wasn't the erosion process at work in America before the white man came? After all, the North American Continent had been here for millions of years prior to that. There was plenty of time for all of America's topsoil to be washed away and the subsoil too. You dig out the answer to that question yourself and you'll have the solution to the problem. We'll give you one hint. The Soil Conservation Service is putting up a gallant fight for the conservation of America's number one resource. But it is playing against a marked deck.

In a letter to Marvin Jones, chairman of the War Foods Administration in Washington, Charles C. Lockwood, of the Greater Detroit Consumers Council, charged that Detroit produce dealers are burning carload lots of fruits and vegetables so as to keep prices high. 'Greed for exorbitant profits is making a racket out of food handling,' he said. He pointed out that 50 carloads of potatoes as well as carloads of onions, radishes, grapefruit and oranges have been burned in City incinerators. The situation was investigated by a reporter for the *Detroit Free Press* who questioned workers at the incinerator. They confirmed the story and said that many of them took potatoes and onions home to their families 'because they were perfectly good to eat.' The letter pointed out that housewives are constantly besieged by the WFA to save food—waste nothing—plant victory gardens—food will win the war, etc. At the same time, he charged, 'truck after truck with monotonous regularity pulls up at this one incinerator and dumps its enormous load of vital food products into the flames and not a single government agency seems concerned. The large scale wastage of vital food that is now taking place all over this country is a shocking indictment of our present distribution setup and of those Government agencies which have control of that setup.' From *Detroit Free Press*, April 14, 1944.

A Primer of Technocracy

What Is Science?

by Education Division 8741-1

In the first three articles of this series, we outlined some of the elementary principles of Technocracy. In the progression of mankind from the savage state to the type of civilization we have today, extraneous energy has played a fundamental role. Its part in social life is becoming more important every year. America is in the Power Age. In order to understand and solve social problems today, it is necessary to be scientific about it. The political and moral approach antedate the rise of science and technology; consequently, they are inadequate.

Characteristics of Science

DURING his 7000 years of recorded history, man has acquired a large and growing body of knowledge. Some of this knowledge is empirical, that is, acquired at first hand from practical experience. Some of it is scientific, that is, derived from deliberate investigation. That body of knowledge referred to as scientific is exact, organized and verifiable. Besides these two kinds of knowledge, which are really only one, except for convenience of education, man also has acquired an amazing array of abstract concepts of a philosophical nature. These concepts cannot be recognized as knowledge at all, for they are neither empirical nor scientific. Proceeding as they do from that illusory dream world of the inner consciousness, they are subjective interpretations of imaginary things, not existing anywhere in the physical universe. That fact, of course, does not stop their conception or promulgation. Neither

is it socially desirable nor necessary that this be accomplished. However, it is necessary to be able to distinguish between fact and fable.

Fortunately, we have a yardstick for this purpose. When any concept cannot be measured because the thing or event meant by it, or to which it refers, cannot be found in the external world, it is pure conjecture. Such concepts are correctly defined as opinions. Since opinions cannot be measured, they are all equally invalid in the solution of problems of a physical world. The field of scientific knowledge is confined to the bedrock of measurable reality. Beyond lies the shifting ground of conjecture and opinions. This is the domain of metaphysics. In addition to dealing only with that which is measurable, scientific knowledge is objective and impersonal. Like the genii of Aladdin's lamp, it executes the bidding of its possessor. Science is anybody's servant.

Science can be defined as threefold,

that is, static, potential and dynamic. Statically, it is a verifiable body of classified knowledge. Potentially, it is a set of deduced conclusions and induced principles elaborated from this knowledge. Dynamically, science is the application of these conclusions and principles to the problems of a physical world, so as to indicate solutions to problems at hand and point out the most probable results that may be expected from any set of conditions. In effect, this means the next most probable state of development of anything. So, it can be said that science, as a whole, is *the methodology for the determination of the most probable*.

Methods of Science

Concurrently with the acquisition of knowledge, man developed the scientific method for the extension and application of this knowledge. It has a well-defined technique, consist-

ing of three steps that arise out of the threefold nature of science itself. These may be called analysis, synthesis and operations. The analysis is the collection, verification and organization of facts by means of observation, research and experiment. This establishes the verifiable body of classified knowledge which is the static side of science. The synthesis interprets all inter-related factors and by deduction and induction yields conclusions and principles which make up the potential part of science. The operations step is the application of conclusions and principles on the basis of probability. This is the dynamic side of science. Hypothesis, induction and deduction are used in all steps of the scientific method, in strict accord with the facts. The threefold scientific method is a part of the threefold nature of science.

NEXT ISSUE: What is Technocracy?

It's Time To Put On Long Pants

'At the present time our technology has outgrown our social system; the great forces of the Power Age are straining within the confines of institutions that were fashioned in stage coach days. The great wars of the 20th Century are expressions of this cultural conflict, and are chiefly significant for one reason; they are the means by which an old order is to be scrapped and a new one brought into being.'—Prof. Leslie A. White, U. of Michigan anthropologist in *Science News Letter*, December 25, 1943.

'We live in a revolutionary century. All over the world, men are groping toward the high plateau of material abundance which has been opened to them by the achievements of modern technology.' Excerpt from an editorial in *Chicago Sun*, 3/6/44.

Human inertia is that state of metabolism wherein the iron in the system changes to lead in the seat of the pants.

A co-ordinator is a man who brings organized chaos out of regimented confusion.

Technology Marches On

'Uralloy' Throws Its Hat In The Ring

by Research Division 8741-1

Wouldn't Paul Bunyon Be Surprised!

Back in December 1935 *Technocracy Magazine* published a cartoon by C. D. Batchelor. It was entitled 'The Real Revolutionist,' and depicted a scientist with a time bomb labeled 'Inventive Genius.' A recent example which illustrates everything that sketch signified is shown in the discovery by chemists of the U. S. Department of Agriculture's Forest Products Laboratory at Madison, Wisconsin, and by Dr. J. F. T. Berliner of the DuPont Company chemical staff, that wood can be 'transmuted' into a material as hard as many metals. One account said that the new 'alloy' is so tough that an oxy-acetylene torch requires nearly twice as long to cut through it as it takes to cut through a piece of steel of the same size.

The Forest Products Laboratory holds several public service patents on the process. The word 'uralloy' was coined by the Laboratory. The 'alloy' suggests that changes take place in the wood that compare with the effects of alloys in metal. The first syllable 'ur' derives from urea, the basic chemical used in the process.

Briefly, ordinary lumber is immersed in a bath of methylolurea, which combines with the cellulose in

the wood to form a new, ultra-hard 'alloy.' This impregnation takes less than an hour, while the usual creosote-preserving treatment requires several days. The raw materials for methylolurea compound are ammonia, carbon dioxide, and methanol (wood alcohol). These are so abundant that wood can be 'transmuted' at a cost of about four cents a board foot. Using the same method, sawdust, shavings, cotton, paper and crop wastes can also be hardened and molded. Both lumber and these other products can be dyed at the same time so that any color can be imparted to them permanently.

I Didn't Do It With My Little Hatchet

'The basic research at Madison established that soaking wood in urea solution caused striking changes. When heated, the treated wood could be bent easily to relatively sharp curves. When it cooled, the wood became rigid again, retaining its new shape. But if reheated, it became plastic again. This plasticity suggested further experiments that showed that urea treated wood could be made to behave very much like some of the commercial plastics. Formaldehyde is one of the chemicals used to 'set' some commercial plastics and it acted similarly with wood. The investigators found that by add-

ing formaldehyde and certain other chemicals to the ureau solution, they could make the wood 'thermosetting,' that is, when the treated wood was heated, it would set permanently and reheating would not make it plastic again. This treatment also makes the wood stiffer, harder, and more water resistant.'

Because 'uralloy' is virtually flame-proof, it can be used in house and bridge construction. There, it can replace much steel and iron. This will also permit lighter construction parts since 'transmuted' wood is scarcely any heavier than the natural variety, while approaching the strength of steel, size for size. Its hardness, plus its plasticity, will permit its fabrication into superior furniture. Moisture does not affect it, so doors and windows, desk drawers, etc., of 'transmuted' wood will not stick in humid weather. Boat plank-ing made of 'transmuted' wood will be almost leakproof. This means less business for the pump manufacturers.

Among the net technological effects, when 'uralloy' reaches the mass

production stage, will be a considerable cut in the market for steel, fewer fires and many changes in the furniture, boatbuilding and construction industries. Farm and lumber mill by-products can be used this way, thus conserving much metal. Even some factory machinery can be made of 'uralloy' and perhaps even automobile frames.

Out west thousands of tourists visit the Petrified Forest each year. Trees which grew centuries ago are still atop the ground, perfectly preserved. The wood in them has strangely turned to stone, but still looks like wood. The slow processes of nature required milleniums of time to 'transmute' this wood into a stone-like alloy useful chiefly as paper weights and souvenirs. Chemistry does a better job of 'transmuting' wood into a hard, workable, long-lasting alloy and does it in one hour. Development of the 'uralloys' marks a long step forward in the conservation of America's non-replaceable natural resources.

Technology Marches On!

Le Habitant Grows Such 'Quaint' Orchids

'The Northwest Mounted Police have investigated 14,000 draft dodgers in the French province of Quebec this year and the police in khaki, who also arrest the AWOL's have been nabbing about 400 a month . . . notwithstanding the fact that the draft by itself does not conscript men for overseas duty.'—From *Chicago Tribune*, March 15, 1944.

'Quebec's youngest political party carries its ardent nationalism even to the banquet table. When Le Bloc Populaire wound up a recent Montreal convention five toasts were given in this order. The Pope; Canada; Quebec; Maxime Raymond, party founder and national leader, and Andre Laurendeau, newly appointed Quebec leader of the Bloc.'—From *Mac Lean's Magazine*, March 15, 1944.

Technocracy and Your Trade

The Steel Worker

by R. F. Novalis

*'One Ship Goes East and
Another West, by the Selfsame
Winds That Blow'*

ON the production and capacity side the American iron and steel industry set new high records last year. In 1944 the capacity will go still higher, although output will decline somewhat if the European half of the war ends this year. In so far as the man-hours needed per ton of steel and iron, that is something else. As one newspaper headline put it last September 8th:

STEEL OUTPUT RISES DESPITE LABOR SHORTAGE.

This is nothing new, since Pearl Harbor, say; rather it is a trend which has been going on since World War I. Here are the official Census Bureau figures on this trend.

Steel Mills and Blast Furnaces

Year	No. of Plants	Employees	Installed hp. of Machinery	Steel and Pig Iron Output (Tons)
1899	688	222,500	1,600,000	22,000,000
1919	695	416,748	4,600,000	72,000,000
1939	475	390,000	4,944,000	88,300,000

Thus the number of iron and steel plants and the working force required to man them declined, while production mounted and the installed horsepower of engines and motors increased. The important point is not only the overall decline in employment but the rise in tonnage per

employee as a result of the use of more power and technology.

Back 45 years ago the average iron and steel plant workman was able to turn out about 100 tons a year, with the 7 horsepower of energy and the technology at his command. By 1939 he had nearly 13 horsepower plus a higher technology and so was able to produce about 230 tons a year. Of course, as the average strong workman can equal at best only 1/10th horsepower a day it was never the man who produced the steel but the power and technological processes. Those are overall basic trends. Within them are other factors.

Between 1924 and 1938 a total of 27 automatic strip steel mills were put into operation. These have a total capacity of 15,000,000 tons a

year; and have permanently displaced 38,470 steel workers, according to the *Monthly Labor Review* for May 1940.

The war has altered the steel picture somewhat but has not changed the basic trends. Indeed, it has intensified them. The wartime peak of

employment was reached back in June 1942 when 659,000 persons were on steel mill jobs. The 1942 average was 647,000. This dropped to 626,000 in 1943. Steel output, however, increased to 89,000,000 tons in 1943 from the 86,000,000 tons of 1942; in spite of the decrease in jobs.

Latest figures of the American Iron and Steel Institute give steel employment at 578,000 in March 1944. This is the lowest since November 1940 when it was 577,000. The 577,000 at work then turned out less than 6,500,000 tons a month while the 578,000 (only 1,000 more) at work in March 1944 turned out more than 7,500,000 in one month.

Who is turning out the extra million tons of steel a month? Not the lesser number of men, surely? Of course not. It's being done with kilowatts* of electricity which, paying no attention whatever to the Little Steel Formula, works 24 hours a day without ever stopping, if necessary, for 1c an hour and less. Think that over for a while.

*You Cut My Throat and
I'll Cut Yours*

Besides the use of more extraneous energy in the steel industry which results in the displacement of workers, advancing steel and other metal-

*According to the Federal Power Commission reports the iron and steel industry's consumption of electric power in 1939 was 12,750,000,000 kw. hrs., in 1942 it was 21,000,000,000, in 1943 it was 24,250,000,000 and in 1944 it will be around 25,250,000,000. This is double the 1939 rate.

lurgical technology has the same effect. For instance, consider the following two examples.

According to an item which appeared in the *Chicago Herald American* on December 14, 1943 the Kaiser Steel Company has developed a steel alloy which is 600 times tougher than nickel alloy and 150 times tougher than chromium alloy. The announcement was made by D. D. Barbour, assistant chief metallurgist of the company. Then, consider the following.

Life of high speed tools is upped 30% to 100% by 2 to 3 hours exposure to minus 120 deg. F. Coldtreated drills, at work on SAE steel Brinall hardness of 407, cut 256 holes before resharpener as against a former 48. Milling cutters, thoroughly chilled, withstand 24 hours continuous operation instead of 7. Hack saw blades, frozen for 3 hours at 120 deg. below, show 119% increase in service life. Taps for thread-cutting when refrigerated average 710 workpieces instead of 40.—*Modern Industry*, April 15, 1944.

But this isn't all that the steel worker has to contend with. Steel, as a metal, is in competition with other metals. Steel is a mixture of carbon and iron. All organic material contains carbon and it exists in a more or less pure state in charcoal, coke, coal and peat. But there is a limit to the amount of iron available. The Smithsonian Institution has calculated that the percentage of iron in

the earth's crust is 5.46; while aluminum, a steel competitor, is rated at 7.41.

Then, there is the growing family of aluminum alloys. This brings us to R301 and R303. These are new aluminum alloys developed by Reynolds Metals Company. R301 is a sheet metal and R303 is used for castings and extrusions. They have a tensile strength of about 64,000 pounds per square inch. The characteristics of these alloys are shrouded in military secrecy, for the present.

It is stated, however, that R301 is tougher and stops armor piercing bullets more effectively than steel. Both of them are credited with being easy to work and form. They are

likely to push steel out of the picture for many uses.

Well then, it may be said, all the steel worker has to do is to move over to the aluminum plant and carry on. Oh Yeah? It's not as simple as that. You see, technology and energy are also at work in the aluminum industry upping production and downing employment. Well, what then?

The answer is we will either have to control energy and technology—or else. The beautiful part about this problem is that these physical factors can only be controlled by non-Price System methods. If we can digest that the problem is half solved. Mr. Steel Worker, can you take a hint? Investigate Technocracy.

Plane Output Time Spectacularly Cut

'Evidence of the remarkable efficiency of American workers came this week from the Aircraft War Production Council, composed of big Western plane manufacturers. It disclosed that the construction time of fighter planes has been reduced from 157,000 to 7,800 man-hours and the time on a four-engined bomber model was cut from 200,000 to 13,000 man-hours'.

Labor, February 19, 1944

Representative Harness (Rep. Ind.), conducted a poll of workers in 50 war plants for the House military committee. One of the questions was: 'Will you be obliged to sell your war bonds, and how soon, if jobless.' Ninety percent of the answers set the time at from one week to two years, the average being three months. From *Chicago Times*, May 15, 1944.

John Fennely, executive director of the Committee on Economic Development (a private organization) testifying before a Senate Military Affairs subcommittee recently said that mere reconversion back to the 1940 business level would result in unemployment to the tune of 15,000,000 to 19,000,000 persons as compared with the 8,500,000 jobless at that time. He attributed this probability to 'the expanded economy we have created.' Fennely added, 'Unless business production can be kept high that will be an intolerable burden.' From *Chicago Sun*, April 6, 1944.

Records of the Social Security Board reveal that unemployment has been increasing steadily throughout the nation since last November. Benefit payments under the Social Security law averaged more than \$6,000,000 a week during February, 1944. Records of the War Man-Power Commission, at the same time, reveal that an increasing number of persons have been applying at offices of the United States Employment Service. From *Cleveland Plain Dealer*, April 5, 1944.

In the Question Box

by Public Speakers Division 8741-1

Send in your questions on Technocracy and Total Conscription. They will be answered here. The following are a few received since our last issue.

What is the distinction between communism and Technocracy? E.G.

Communism is a political approach to problems of scarcity; in other words, a politician's attempt to divide up a scarcity equitably. Communism can function only where there is a natural scarcity.

Technocracy is an engineering approach to problems of abundance. In other words, a non-political but scientific design for distribution, not division. Since there is no natural scarcity in America, communism is inapplicable and unworkable here.

Is there any possibility of *Technocracy* turning into fascism after it is installed? T.S.

There's as much likelihood of that happening as there is of a 5,000 horsepower Diesel locomotive turning into a wheelbarrow. Technocracy is social progression in accord with science. Fascism is social action in reverse. Technocracy is a going forward; fascism is a going backward. They are mutually incompatible and not even remotely related. Fascism is impossible in a highly developed stage of technology because it is the distilled essence of human toil, hand tools and scarcity. For the same reason, *Technocracy* is impossible in a

handicraft-agrarian culture. Fascism cannot operate America's technological set-up by fascistic methods of compulsion in race, religion, economics and civil rule in general. An industrial civilization must be operated according to the physical laws of science. The more industrialized any culture becomes, the greater this compulsion is. Finally, we reach the point of development where only two alternatives are possible, science or chaos. America has almost reached that point now. Fascism leads backward and downward; science points the way forward and up. No, my friend, *Technocracy* can never turn into fascism.

Would not Total Conscription lead to the installation of a new social system? G.B.

Total Conscription is not social reform, nor revolution. Sovereign power will remain in the hands of the same statutory authorities who exercise it now. The social structure will not be altered. Technocracy is not proposing, either openly or covertly, that it be put in charge of running the country, either in Canada or the United States. Total Conscription is a blueprint for the designed direction of all national operations for the purpose of waging total war,

winning the peace and guiding America through an orderly transition back to peace in the postwar period.

Wouldn't Total Conscription be a form of dictatorship or totalitarianism? S.W.

Since Total Conscription will be under the authority and direction of our present democratic form of government, it could be neither more nor less dictatorial and authoritarian than that government is now. The United States Government is responsible to the people, and Total Conscription would be adopted for a definite period of time, i.e., the duration and six months thereafter. You'll have to look someplace else for a bogeyman; there's none in Total Conscription.

Will you please explain why our present administration doesn't seem to practice any of the principles of Technocracy when they know so much about it? F.M.

We don't know where you got your information that the Government knows so much about Technocracy, but we hope you are correct. As for the reason why they don't seem to practice any Technocratic principles, the answer is that these ideas are being put into practice much more than we realize. Technological principles are put into effect because of necessity and not because Technocracy advocates them. The difference is that Technocracy is always about five years ahead of the march of events. America will have less and less choice as to what must be done (socially speaking) as time goes on. The reason is that the social mechanism becomes steadily more complex. Don't be too impatient. We're on a one-way street with no outlets and we can't turn around and go back to yesterday. Events must proceed according to the direction and force of impact.

Glad To Meet You Doctor!

Chaplain Appeals for Unity at Home

Dr. Daniel A. Poling, pastor of Baptist Temple, Philadelphia, Pa., and president of the International Christian Endeavor Society, has asked for unity on the home front—'the only front on which this war could be lost.'

'Unity is not uniformity, but there are no racial distinctions in foxholes, flying Fortresses and submarines. . . .

'Whether they are right or wrong, men in the armed services are just about unanimous on two propositions, namely the principle of universal

service and in support of a practical method for taking the soldier vote. . . .

'The universal service principle that now applies to men in uniform, men in uniform believe should apply to every other American. The recognition of this principle on the home front and implementing it with law action is perhaps more important to morale on all fighting fronts than any other one thing. The possible effect of strikes and lockouts is secondary and incidental.' (Italics ours.) Reported in the *Chicago Daily Times*, March 21, 1944.

Straight From the Horse's Mouth

Read 'Em' And Wonder

by The Peripatetic Technocrat

A corporation's efficiency is indicated by the number of men it can release from a job not by the number of men hired.

Sewell Avery, Chairman of the Board of Directors of Montgomery Ward & Co., March 2, 1944. (As reported in the *Chicago Sun*, April 29, 1944.)

The war will be over in two months. I can't tell my reasons. I have them, of course.

Henry Ford at Atlanta, Georgia, March 20, 1944. (As reported in the *Chicago Sun*, April 21, 1944.)

Within 60 days this country will be practically on a famine basis with respect to supply of beef. By the end of 90 days the pork supply will have shifted from a feast to a famine basis.

P. O. Wilson, Executive Secretary, National Livestock Producers Association, February 7, 1944. (As reported in the *Chicago Sun*, April 12, 1944.)

In reaching a conclusion we allow an adequate margin of profit, plus a margin of generosity, plus a margin for good measure.

Maurice H. Karker, Chairman of the War Department Price Adjustment Board, in an article on the renegotiation law in the *Railway Clerk*. (As reported by *The Nation*, March 4, 1944.)

Lesinski and I are on opposite sides in politics; he is a Demo-

crat and I am a Republican, but first of all we are Polish patriots.

United States Congressman Monkwicz of Connecticut, in referring to U. S. Congressman Lesinski of Michigan, at a meeting of the National Committee of Americans of Polish Descent, held recently at Detroit. (As reported in Marquis Child's column in the *Chicago Times*, April 21, 1944.)

We find everything all that anyone could hope for under present conditions. Some things could be done if there were nothing else to do and if we had someone to do it. So, as bad as it might be, we are pleased to find it as good as it is.

Report of a grand jury at Erie, Pennsylvania, regarding conditions at the country courthouse, after having undertaken an investigation at the request of a judge. (As reported in Sydney J. Harris' column in the *Chicago Daily News*, May 5, 1944.)

After the next war, the United States will rule economically over a desolate and miserable planet, that is, until—the revolution. "When," I asked, "will the revolution come?" Not in my lifetime, but in yours, the great revolutionary said, and it will come in typical Yankee fashion—overnight. It will come because of unemployment and

because your system fails to distribute. It produces—yes—but after your war boom there will be a collapse and depression. 1929 will be but a child's play in comparison.

Leon Trotsky, in a conversation with Carleton Smith in 1940. (As reported in the latter's column in the *Chicago Daily News*, February 5, 1944.)

To this we can add that if America permits a violent revolution the only result will be a permanent depression, six feet under the ground for most Americans. Social violence is the Achilles heel of the Power Age.

NATIONAL DEFENSE—We believe that in time of war the nation should draft for its defense not only its citizens but also every resource which may contribute to success. The country demands that should the United States ever again be called upon to defend itself by arms the President be empowered to draft such material resources and such services and essential commodities, whether utilized in actual warfare or private activity.

The above was a plank in the Republican Party's platform of 1928. Heigh Ho! Heigh Ho! For the brave

politico! In time of peace he makes a platform for war. In time of war he makes a platform for peace. It is said that an eel is slippery; and that mercury is hard to pin down. Maybe so, but the champ of all champs in this respect is our everyday garden variety of politician. Heigh Ho! Heigh Ho! Off to the Conventions we go!

Capitalism and socialism have begun to find the way to peaceful co-existence and collaboration in the same world.

Earl Browder, ex-General Secretary of the ex-American Community Party, at a mass meeting in Madison Square Garden, New York, January 10, 1944. (As reported in the press.)

The U. S. House of Representatives is "the least enlightened and dumbest bunch I ever had anything to do with. I'm damn sick and tired of being in the majority and having the minority run the house."

Thomas Francis Ford, Congressman from California, in explaining his refusal to run for re-election although he is sure of winning his seat again for the seventh time. (As reported by *Time*, May 1, 1944.)

The National Association of Retail Druggists has come out flatfootedly against the Wagner-Murray-Dingell bill. The Association insists on the 'freedom of choice of practitioners' and is opposed to the 'autocratic regimentation of medical services.'

This pressure group has to its credit a successful effort to prevent the OPA from putting into effect a 15 percent cut in vitamin prices. Well why not? 'You scratch my back and I'll scratch yours.'

Contributors To This Issue

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Articles by the various Divisions of 8741-1 are collective compilations.

'Universal Service, like unselfishness, works only when all work at it. If we draft workers, we must also draft profits.' Robert Quillen, in his daily column, *Chicago Sun*, March 26, 1944.

According to a survey conducted by the New York City College sociology department more than 70 percent of New York City's population violates the OPA ration point rules, or buys on the black market. The survey said that families with incomes above \$3000 a year violate the law five times as often as poorer families. From *Chicago Times*, May 14, 1944.

A survey conducted by the *Chicago Sun* shows that black marketeers pocket at least \$75,000,000 a year in Chicago. The figure is considered conservative because it represents only 5 percent of the annual turnover of \$1,500,000,000 in hard-to-get items such as food, gasoline and liquor. From *Chicago Sun*, April 5, 1944.

'The great thing in this world is not so much where we stand as in what direction we are moving.'—Oliver Wendell Holmes.

For copies of GREAT LAKES TECHNOCRAT and other literature, and for information regarding meetings and activities of Technocracy Inc., in the Great Lakes area the following Section addresses will be helpful.

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8141-3—38 South High St., Akron, Ohio.

8141-4—2237 Front St., Cuyahoga Falls, Ohio.

8141-7—501½ Tuscarawas St., Barberton, Ohio.

8141-14—P. O. Box 545, Ravenna, Ohio.

8141-15—12516 Shaw Ave., Cleveland, Ohio.

8240-1—207 N. Washington St., Galion, Ohio.

R. D. 8242—c/o Arthur C. Clayton, Marine City, R. No. 1, Mich.

R. D. 8242—c/o John Reynolds, St. Clair, R. No. 2, Mich.

8339-2—302 N. Clairmont Ave., Springfield, Ohio.

8341-1—2276 Putnam St., Toledo, Ohio.

8342-1—9108 Woodward Ave., Detroit, Mich.

8342-2—1610 N. Saginaw St., Flint 4, Mich.

8342-2—615 Peoples State Bldg., Pontiac, Mich.

8439-1—P. O. Box 81, Station A, Dayton, Ohio.

R. D. 8641—916 E. Corby Blvd., South Bend, Ind.

8743-1—2250 N. 27th St., Milwaukee, Wis.

8844-1—217½ Pine St., Green Bay, Wis.

8844-2—1208 N. Richmond St., Appleton, Wis.

8844-3—135 Van St., Neenah, Wis.

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TECHNOCRACY

WHAT?

WHERE?

WHEN?

WHO?

WHAT?

★ Technocracy is the only American social movement with an American program which has become widespread in America. It has no affiliation with any other organization, group or association either in America or elsewhere.

★ The basic unit of Technocracy is the chartered Section consisting of a minimum of 25 members and running up to several hundred.

★ It is not a commercial organization or a political party; it has no financial subsidy or endowment and has no debts. Technocracy is supported entirely by the dues and donations of its own members. The widespread membership activities of Technocracy are performed voluntarily; no royalties, commissions or bonuses are paid, and only a small full-time staff receives subsistence allowances. The annual dues are \$6.00 which are paid by the member to his local Section.

★ Members wear the chromium and vermilion insignia of Technocracy—the Monad, an ancient generic symbol signifying balance.

WHERE?

★ There are units and members of Technocracy in almost every State, and in addition there are members in Alaska, Hawaii, Panama, Puerto Rico and in numerous other places with the Armed Forces.

★ Members of Technocracy are glad to travel many miles to discuss Technocracy's Victory Program with any interested people and Continental Headquarters will be pleased to inform anyone of the location of the nearest Technocracy unit.

WHEN?

★ Technocracy originated in the winter of 1918-1919 when Howard Scott formed a group of scientists, engineers and economists that became known in 1920 as the Technical Alliance—a research organization. In 1930 the group was first known as Technocracy. In 1933 it was incorporated under the laws of the State of New York as a non-profit, non-political, non-sectarian membership organization. In 1934, Howard Scott, Director-in-Chief, made his first Continental lecture tour which laid the foundations of the present nation-wide membership organization. Since 1934 Technocracy has grown steadily without any spectacular spurts, revivals, collapses or rebirths. This is in spite of the fact that the press has generally 'held the lid' on Technocracy, until early in 1942 when it made the tremendous 'discovery' that Technocracy had been reborn suddenly full-fledged with all its members, headquarters, etc., in full swing!

WHO?

★ Technocracy was built in America by Americans. It is composed of American citizens of all walks of life. Technocracy's membership is a composite of all the occupations, economic levels, races and religions which make up this country. Membership is open only to American citizens. Aliens, Asiatics and politicians are not eligible. (By politicians is meant those holding elective political office or active office in any political party.)

★ Doctor, lawyer, storekeeper, farmer, mechanic, teacher, preacher or housewife—as long as you are a patriotic American—you are welcome in Technocracy.

**Great Lakes Technocrat,
306 W. Randolph Street,
Chicago 6, Illinois**

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'---"Whatever the future of Technocracy, one must fairly say that it is the only program of social and economic reconstruction which is in complete intellectual and technical accord with the age in which we live."---.'

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